Datex-Ohmeda

Datex-Ohmeda S/5™ Central, ViewStation and Network

Technical Reference Manual

CE 0537

Conformity according to the Council Directive 93/42/EEC concerning Medical Devices.

All specifications are subject to change without notice.

CAUTION: U.S. Federal law restricts this device to sale by or on the order of a licensed medical practitioner.

Outside the USA, check local laws for any restriction that may apply.

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Datex-Ohmeda S/5™ Central, ViewStation and Network

Intended purpose

The Datex-Ohmeda Network transfers information between networked Datex-Ohmeda devices in the Datex-Ohmeda monitor network. It also allows information transfer between several Centrals. Within one Datex-Ohmeda monitor network it allows a networked device to display, store, print and otherwise process information received from other networked devices.

The Datex-Ohmeda S/5 Central maintains the network connections between the Datex-Ohmeda bedside monitors and other networked devices in Datex-Ohmeda monitor network. Furthermore, it coordinates the transfer of information between devices in the Datex-Ohmeda Network as well as between the Datex-Ohmeda Network and Hospital Information Systems (HIS).

The Datex-Ohmeda S/5 Central can be used for storing, printing, viewing or otherwise processing of information from several bedside monitors or other networked devices.

The Datex-Ohmeda S/5 ViewStation can be used for printing, viewing or otherwise processing of information from several bedside monitors or other networked devices.

The Datex-Ohmeda Network will be used for patients in the hospital and it is meant for continuous use.

The device is for use by qualified medical personnel only.

CE marking

- The Datex-Ohmeda S/5 Central software, S-CNET99, and S/5 ViewStation software, S-VNET99, are CE marked in accordance with the EU Medical Device Directive.
- The Datex-Ohmeda S/5 Central Patient Screen and Status Screen display units, computer and keyboard are CE marked in accordance with the EU Directive for Electromagnetic Compatibility of Low Voltage equipment.

Responsibility of the manufacturer

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- electrical installation complies with appropriate requirements.
- equipment is used in accordance with the User's Guide and serviced and maintained in accordance with the Technical Reference Manual.

Storage and Transport

For allowed storage and transport conditions refer to the documentation delivered with the monitor.

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Part I

1 INTRODUCTION

1.1 Symbols

Attention. Consult accompanying documents.
In this device the symbol means that the device must be supplied from an appropriate separating transformer when placed in the patient environment.

Fuse. Replace only with a fuse with same type and ratings.

Equipotential terminal.

A LED marked with this symbol indicates recorder error.

Interface device connector.

Page scrolling symbol. The Central and ViewStations are automatically displaying the next page at configurable intervals.

Alarms silenced from the bedside monitor.

Submenu: there is another menu available under this selection

1.2 Abbreviations

AM	Datex-Ohmeda S/5 Anesthesia Monitor
ARK	Datex-Ohmeda S/5 Anesthesia Record Keeper
ArrWS	Datex-Ohmeda S/5 Arrhythmia Workstation
CCM	Datex-Ohmeda S/5 Critical Care Monitor
CM	Datex-Ohmeda S/5 Compact Anesthesia Monitor
CMC	Datex-Ohmeda S/5 Compact Critical Care Monitor
CRC	Cyclic redundancy check
EMI	Electromagnetic interference
FTP	Foiled twisted pair
HIS	Hospital information system
ID	Identification
IM	Information management
RF	Radio frequency
TP	Twisted pair
UTP	Unshielded twisted pair

1.2.1 Conventions used in this manual

To help you find and interpret information easily, the manual uses consistent text formats for certain text types:

- Command buttons are written in the following way: **Cancel.**
- Menu items are written in bold italic typeface, for example ***Screen 1 Setup.***
- Menu access is described from top to bottom. For example, the selection of the ***Locations*** item from the ***Screen 1 Setup*** submenu of the ***Setup*** menu, would be shown as ***Setup - Screen 1 setup - Locations***.
- File names, file paths and commands are written in Courier New typeface, for example `comm.exe`.
- Messages (alarm messages, informative messages) displayed on the screen are written inside single quotes, for example 'Printing...'
- When referring to different sections in this manual, section names are written in italic typeface and enclosed in double quotes, for example *"Cleaning and Care."*

1.3 Safety precautions

WARNING **A WARNING indicates that there is a possibility of injury to yourself or others.**

- Do not locate the S/5 Central, ViewStation, hubs or printers in a medically used room, they are non-medical electrical equipment. If locating this type of equipment in this type of room is necessary, use an appropriate separating transformer.
- Do not connect any other external equipment to the network than those specified by the manufacturer.
- Switch the Network Computer off before connecting or disconnecting any cables on the rear panel.
- Check the position of the voltage selector switch on the rear of the Network Computer before connecting the power cable to the wall socket.
- Connect the devices to a three-wire, grounded, hospital grade receptacle.
- Replace the power cable if it is cracked, broken or otherwise damaged. The cable and the plug must always be intact and undamaged.
- Do not apply tension to the power cable.
- Do not remove the grounding prong from the power plug.
- Do not use extension cables or adapters of any type.
- Only qualified personnel (distributor, cabling company or technical hospital staff) may carry out the installation and service.

CAUTION A CAUTION indicates a condition that may lead to equipment damage or malfunction.

- Do not obstruct the ventilation holes of the Network Computer, displays, nor the hub.
- Prevent accidental disconnection of all cables connected to the S/5 Central.
- Do not immerse any liquid or allow liquid to enter the Network Computer, the device interior.
- Wear a static control wrist strap when handling circuit boards and always hold the boards by their non-conductive edges.

2 SYSTEM DESCRIPTION

Datex-Ohmeda Monitor Network is an Ethernet based clinical network which is controlled by the S/5 Central. The S/5 Central provides

- central monitoring and remote viewing of patient sites.
- monitor-to-monitor communication.
- storage for patient data files and preoperative data files, record keeping menu files, and user modes for the monitors.
- printing of patient data
- recording of waveform snapshots.
- services for sharing printers.
- communication with up to three other Centrals within the Datex-Ohmeda Network (TCP/IP)
- access to other hospital data networks.
- time services.

2.1 Datex-Ohmeda Monitor Network

The Datex-Ohmeda monitor network may consist of up to 32 bedside monitors connected via a hub to the Central.

Figure 2-1 illustrates a typical configuration of the monitor network.

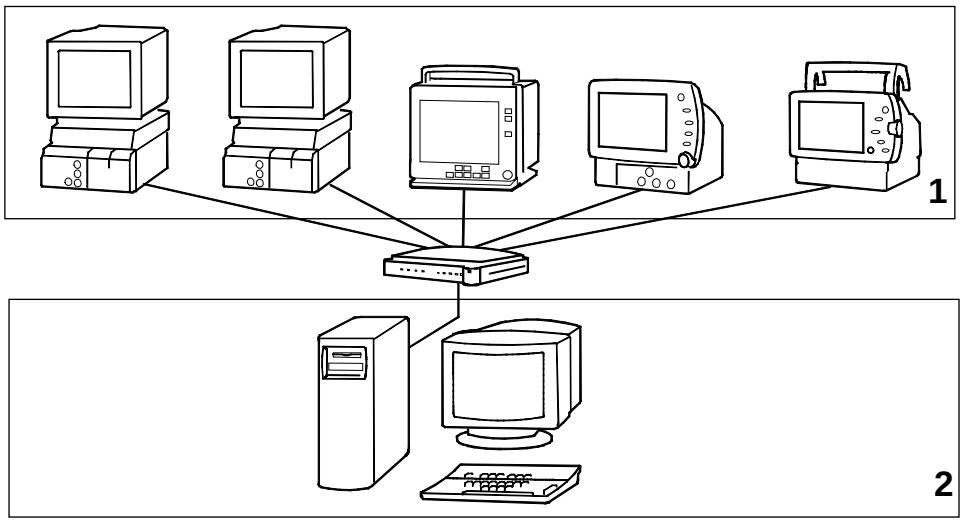


Figure 2-1 Datex-Ohmeda Monitor Network

(1) Bedside monitors connected to a hub

(2) S/5 Central

The hub (10Base T, 10 Mbps) is a multiport repeater and controls the information flow from all the monitors to the Central.

2.1.1 Datex-Ohmeda S/5 Central

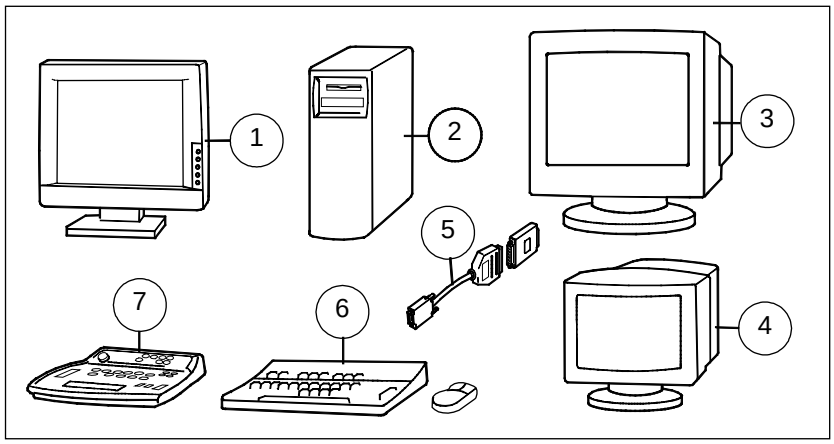


Figure 2-2 Datex-Ohmeda S/5 Central

(1) Patient Screen (LCD screen)

(2) Network computer + two network boards

(3) Patient screen (CRT screen)

(4) Status Screen

(5) Smart key

(6) PC keyboard and mouse

(7) S/5 Central keyboard

Patient Screen displays patient information such as waveforms, numeric fields, alarms, etc., and allows access to various system level operations. Patient Screen has built-in loudspeakers. Two Patient Screens can be connected to a S/5 Central.

Status screen displays system and network information, patient information, alarms and service pages in text. Status Screen is also used during configuration and when starting and exiting programs.

The system can be operated either by a PC keyboard and mouse or a specific S/5 Central keyboard, K-CENTRALB. Only one of the keyboards can be installed at a time. The PC keyboard is handy during installation and administrational tasks; the S/5 Central keyboard is meant for daily use of the S/5 Central in patient environment.

Additionally, there can be a strip-chart recorder, N-REC4, or a laser printer connected to the S/5 Central.

2.1.2 Monitors

Which Monitors?

The, monitors which can be connected to the Datex-Ohmeda Monitor Network are:

– Datex-Ohmeda S/5 Anesthesia Monitor, S/5 Compact Anesthesia Monitor, S/5 Critical Care Monitor and S/5 Compact Critical Care Monitor. These monitors require a network board, e.g. B-NET or B-UPINET to enable the connection to the network. NOTE: There are some limitations in data loading capabilities in monitors equipped with S-ANEXX software.

- Datex-Ohmeda Cardiocap/5 with the options N-XNET and N-XDNET
- Datex-Ohmeda S/5 Light Monitor (models F-LM1 and F-LMP1 with options N-LNET and L-LDNET). NOTE: There are some limitations in the monitor-to-monitor communication and data loading capabilities in Light Monitor. Please see the Light Monitor's manuals.

How many monitors?

The number of monitors, (4, 8, 12, ...32) connected to the Datex-Ohmeda Monitor Network is set through the smart key. The smart key is a special plug inserted into the serial port of the S/5 Central. The maximum configuration is 32 monitors.

2.1.3 Datex-Ohmeda S/5 Arrhythmia Workstation

You can connect the Datex-Ohmeda S/5 Arrhythmia Workstation, to the Datex-Ohmeda Monitor Network. You can connect one monitor to one Arrhythmia Workstation only and 16 monitors to one workstation at the most. You can connect two Arrhythmia Workstations to a network with 32 monitors.

The Arrhythmia Workstation cannot use the same printer as Central; it requires its own.

2.2 Datex-Ohmeda Network (TCP/IP)

You can connect up to four Datex-Ohmeda Monitor Networks (4 x 32 monitors) together to form the Datex-Ohmeda Network (TCP/IP). The network uses the TCP/IP protocol, and the monitor networks are connected to it via a 100Mbps hub. It is possible to connect up to four S/5 ViewStations to the Datex-Ohmeda Network (TCP/IP).

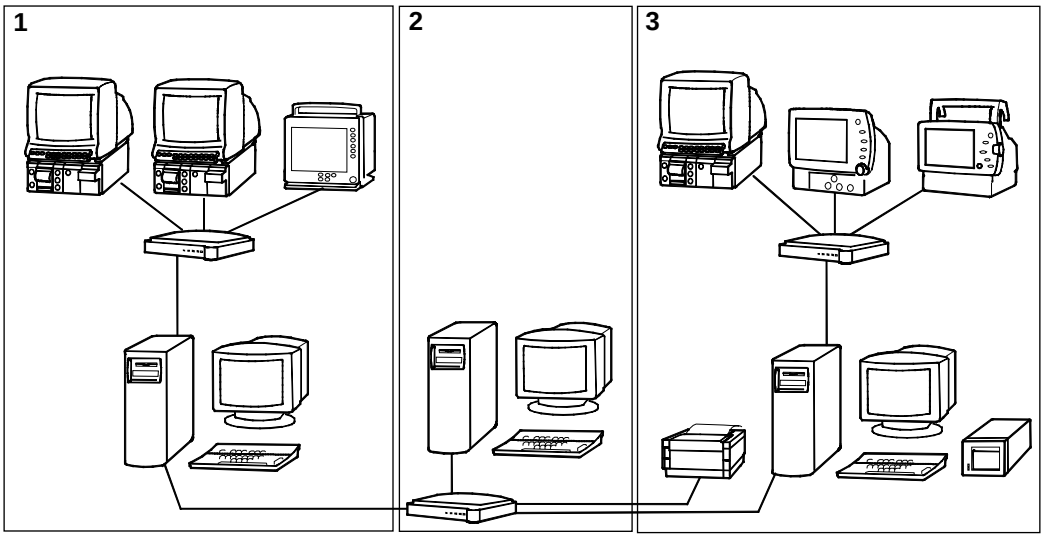


Figure 2-3 Datex-Ohmeda Network (TCP/IP)

(1) Monitor network with S/5 Central

(2) Datex-Ohmeda Monitor Network (TCP/IP) with S/5 ViewStation

(3) Monitor network with S/5 Central and a recorder

You can connect a laser printer to the S/5 Central or S/5 ViewStation or directly to the 100 Mbps hub.

2.2.1 ViewStation

Datex-Ohmeda S/5 ViewStation consists of the same components as the Central, and functions similarly except:

- It runs by the software S-VNETXX.
- There are no monitors connected to it.
- It cannot store patient data.
- It has no smart key (N-ICXX).
- It has only one network board (TCP/IP).
- The ViewStation cannot work without a Central, but the Central works without a ViewStation.

The ViewStation is used for centralized monitoring and remote viewing of patient sites, for example in the office. A laser printer or recorder can be connected to ViewStation as well.

From a Central you can see only the monitors configured to it but from the ViewStation you can see any of the monitors connected to the Datex-Ohmeda Network (TCP/IP), up to four monitor networks. However, you can see a maximum of 32 monitors at a time.

ViewStations are connected to the 100 Mbps hub.

NOTE: To enable connecting ViewStations to the system, the Central requires the software S-CNET99 Ver 1.2, or newer.

2.3 Network services

The following services are provided by the S/5 Central.

2.3.1 Central monitoring and remote viewing of patient sites

Waveforms, numeric fields, alarms, and other patient information from the networked monitors are displayed at the Central on the Patient Screen. Real time waveform fields and numeric fields are transmitted to the Central after start up and the numeric fields are updated every 10 seconds. The Patient View is a copy of a single bedside monitor's display with a few exceptions, and the Multi View displays one or two vital waveforms from 8 or 16 beds simultaneously.

Exceptions in Patient View are:

- Split screens are not displayed (minitrends or spirometry loops).
- NMT or EEG data are not displayed.
- In tonometry measurement, the $PgCO_2$ digit field is displayed only.
- The spirometry loops are not displayed in the digit fields.
- The text messages are not displayed
- No other parameter messages than ‘Apnea’ and arrhythmia messages are displayed in the corresponding waveform fields, and ‘Audio Off’ and ‘Alarms silenced’ alarm messages are displayed in the waveform fields.

Alarms are displayed both on the Patient Screen and on the Status Screen. Messages are transmitted to the Central as the start-up sequence is complete, and then the messages are transmitted whenever the alarm priority is altered. The priority change at the monitor is displayed at the Central within two seconds.

2.3.2 Monitor-to-monitor communication

Monitor-to-monitor communication is viewing other monitors at a monitor connected to the network using either view links or alarm links. Monitor-to-monitor communication is possible both within the Datex-Ohmeda Monitor Network and the Datex-Ohmeda Network (TCP/IP). In the TCP/IP network, the monitors must have software level S-XX99 or newer to communicate between monitors.

The number of simultaneous view links is limited to 16 simultaneously. Alarms, real time waveform fields, numeric fields and up to 60 minutes of trend data are transmitted. The numerical fields are updated every 10 seconds and the trend data once a minute.

Number of alarm links is not limited. Alarm messages are transmitted from one monitor to another via the Central as the alarm is initialized. Afterward the messages are transmitted whenever the alarm priority has changed.

NOTE: The Datex-Ohmeda S/5 Light Monitor can be connected to the network and viewed from other monitors, but other monitors cannot be viewed at the Light Monitor.

2.3.3 Storage for the patient data files and preoperative data files

You can collect patient data on the hard disk of the Central throughout the case, also during patient transport, or if the patient is moved to another monitor (data continuum). When the monitor is not connected to the network, you can save the data on the data card.

Patient data from the networked monitors is stored on the hard disk of the Central. The directory where the patient data is saved is generated when the patient is admitted or the case is started. The start time is stored in the status file, and the patient name or identification number is stored in the identification file. Up to 48 hours of trend data is stored in the trend files, and the record keeper events are stored in the event file. The end time of the case is added to the status file when the case is closed or the patient discharged. You can re-open the case within a configured time, max. 24 hours (if there is preoperative data only - no trend data - the time can be extended up to 96 hours).

NOTE: You can load data from the network to the monitors with the software S-ARKXX and S-ICUXX only and to Cardiocap/5 monitor, not to a monitors with the software S-ANEXX, or Light Monitor. Trend data from the Light Monitor is not collected to the network, but on a card only.

2.3.4 Storage for the record keeping menu files

The record keeping menu files are stored on the hard disk of the Central during network installation. You can load the menu pages to the monitors with the software S-ARKXX.

2.3.5 Storage for the user modes

You can use the predefined user modes with the monitors AM, CM, CCM and CMC that define the monitor setup. You can send the user modes from a monitor to the Central's hard disk, and load them to other monitors.

By default, all the monitors with same software type and revision use same user modes. If part of the monitors needs specific user modes, make a group of the desired monitors, see section 1.

2.3.6 Printing and recording trends and snapshots

Either a laser printer or a strip-chart recorder, N-REC4 can be connected to the S/5 Central. On the laser printer the S/5 Central can print trends, waveform snapshots, anesthesia records and reports as defined in the networked monitors. For printer and recorder setup see section "*Installing a recorder"* and *"**Installing a printer**."*

Also a network printer can be used, connected directly to the 100 Mbps hub. In that case the printer must be equipped with a network board (default in the printers sold by Datex-Ohmeda.)

Each monitor can have access to 9 printers at the maximum.

You can start the central printing either from a monitor or the Central. Start the recorder manually from the recorder or if it is connected to a Central it can be started automatically by an alarm. Automatic (alarm triggered) printing is not available at the ViewStation.

2.3.7 Access to other hospital data networks

You can convert information from other hospital networks, like admission data and laboratory results to record keeping events and send them to the monitors, and vice versa. However, you cannot connect the Datex-Ohmeda Monitor Network or Network (TCP/IP) to the hospital information system (HIS) directly, but via a Datex-Ohmeda IM server connected to the 100Mbps hub. For transferring information from the system to another, refer to the S/5 Anesthesia System Interface and Inlink manual, and to a guide for the specific datagate communication client.

For the manuals and tools required, contact your sales representative.

2.4 Time services

The Central provides time services for all connected monitors. Within the Datex-Ohmeda Network (TCP/IP) use preferably the primary Central or a Datex-Ohmeda IM Server as a time server for other Centrals. See 5.2.3 “System Setup” for details.

2.5 Communication in the network

The monitor registers to the monitor network by transmitting a registration message. The Central completes the registration sequence by transmitting a registration response.

The monitor transmits data packets to the Central with a maximum interval of 10 seconds. Similarly, the Central transmits data packets to the monitor with a maximum interval of 10 seconds. Even though there is no need to transmit data, dummy messages are transmitted to maintain the communication.

In case of an interruption in the communication, the monitor attempts to register to the Central every 10 seconds.

The data packet formula is that of standard Ethernet, but the contents are Datex-Ohmeda specific.

2.5.1 Data integrity

Data integrity means preventing or correcting possible communication errors. The error prevention approach in the network is cyclical redundancy check (CRC). In CRC, the transmitting device calculates a checksum for each data packet. The checksum is recalculated and compared at the receiving device, and if no errors are detected, an acknowledgment message can be sent back. If no acknowledgment message is received, the originating device retransmits the missing or corrupted packet.

3 CABLING

3.1 General

3.1.1 Cabling standards

The international standards in network cabling are ISO/IEC 8802-3 (ANSI/IEEE 802.3), EIA/TIA-568 (Category 5) and EIA/TIA-TSB40. These standards define cable types, cable lengths, connector types, etc.

3.1.2 General restrictions

Configure the Network within the following general restrictions.

- Up to 32 monitors can be connected to one monitor network.*
- Only the devices specified by the manufacturer may be connected to the network.*
- Arrhythmia Workstations can be connected to the network. A monitor can be connected to one Arrhythmia Workstation only.
- Up to four Centrals can be connected together through Datex-Ohmeda Network (TCP/IP) with TCP/IP protocol.
- Up to four ViewStations can be connected to the Datex-Ohmeda network.

* Refer to section *System Description* about permitted devices and their number.

3.1.3 Recommended installation tools

- Ground wrist strap
- Hand drill
- Screwdrivers
- 525421-8 AMP stripper
- 558418-1 AMP connection tool/installation tool
- HC-3013-A-T connection tool/installation tool
- Cable scanner (reflectometer)

VX1301 stripper and the G30040 BNC pliers are needed if you will install coaxial cabling.

3.2 Pre-installation testing

The pre-installation testing includes a site survey and a site preparation.

3.2.1 Site survey

Before committing to a cabling system design, you must explore several important issues.

Architectural limitations

- Wide distribution of equipment
- High reliability access requirements (thick walls, etc.)
- Inter building connections

New construction

- Presents "ideal" design opportunities
- Significantly lower labor costs for installation

Existing construction

- Utility of current communications facilities
- Flexibility and expandability of current facilities
- Extent of alteration and additional requirements
- Cost

Ensuring safety

- Observing building and electrical codes
- Ensure availability and quality of electrical ground

Cost

- Installed cost per meter (foot)
- Installed cost per connection/node
- Special considerations (problematic installations)
- Armored cable for rodent protection

Reliability

- Hostile and friendly electrical environments
- Physical cable protection

Expandability

- Cabling facilities are always under-designed and over-utilized.
- Space in wiring closets and cable routs (c. 50 per cent)

Security

- Physical cable plant and facilities
- Access to network
- Protection of data

Site preparation

Consider the following for single connection changes as well as for large-scale initial installation:

- Determining unusual installation problems
- Determining the space in conduit, troughs or plenum
- Evaluation of path alternatives
- Specifying equipment locations
- Understanding aesthetic requirements
- General cabling standard compliance

Recommended participants in the site preparation:

- Hospital system manager
- Distributor's site manager
- Network planner or subcontractor
- Construction or electrical foreman
- Chief physician
- Head nurse

The distributor's site manager and the network planner or subcontractor are responsible for future and general cabling standard compliance, network constraints and specifications. The hospital system manager and the construction or electrical foreman are responsible for installation methods, structural concerns and general cabling standard compliance. The chief physician and the head nurse are responsible for the location of devices, access to information, aesthetics, flexibility (ability to accommodate moves and changes), and impact (disruption) during installation.

3.2.2 Site plan

Using a floor plan, carefully label where the Centrals, ViewStations, monitors and the hub will reside. Locate the Centrals and ViewStations in an office or central desk, the monitors in patient rooms, and the hub in a centrally located wiring closet or equipment room. Locate all devices within an appropriate distance of a power line source.

WARNING **The Centrals, ViewStations, hubs, printers and recorders are non-medical electrical equipment. Do not locate this type of equipment in a medically used room. If locating this type of equipment in this type of room is necessary, use an appropriate transformer.**

Sketch out a map illustrating the horizontal cable from the Central and each monitor to the hub (star topology). If possible, use current communication facilities. Otherwise, use existing leads-through, risers and conduits.

Take into account electrical equipment that may generate high levels of EMI like motors and transformers. Also, avoid power wiring, water pipes, heating ducts, etc., that will affect the cabling system performance or the installation. Keep in mind that sensible placement of the cable allows future expansions and connectivity.

Make an approximation of each segment cable length. According to IEEE 802.3 specifications a twisted pair (TP) segment length may not exceed 100 m (328 ft.). The cable scanner, applied after the cable installation, determines the exact length of the segments. To facilitate your documentation, an example of a site plan is included in the appendices.

3.2.3 Site planning sheet

Using a site plan, transfer each segment cable length to the site planning sheet. Write down in which room you will locate the Central and the monitors, and to which hub port you will connect them. Further, add the type of the monitor and the location ID. Use a separate site planning sheet for each floor the network will extend to. To facilitate your documentation, an example of a site planning sheet is included in the appendices.

3.2.4 Pre-installation test binder

It is recommended to collect all documentation that you receive from the pre-installation testing in a pre-installation test binder. Include information about the hospital, distributor and subcontractor in the binder.

3.3 Horizontal cabling

Use horizontal cabling in cabling bounding to one floor as illustrated in Figure 3-1.

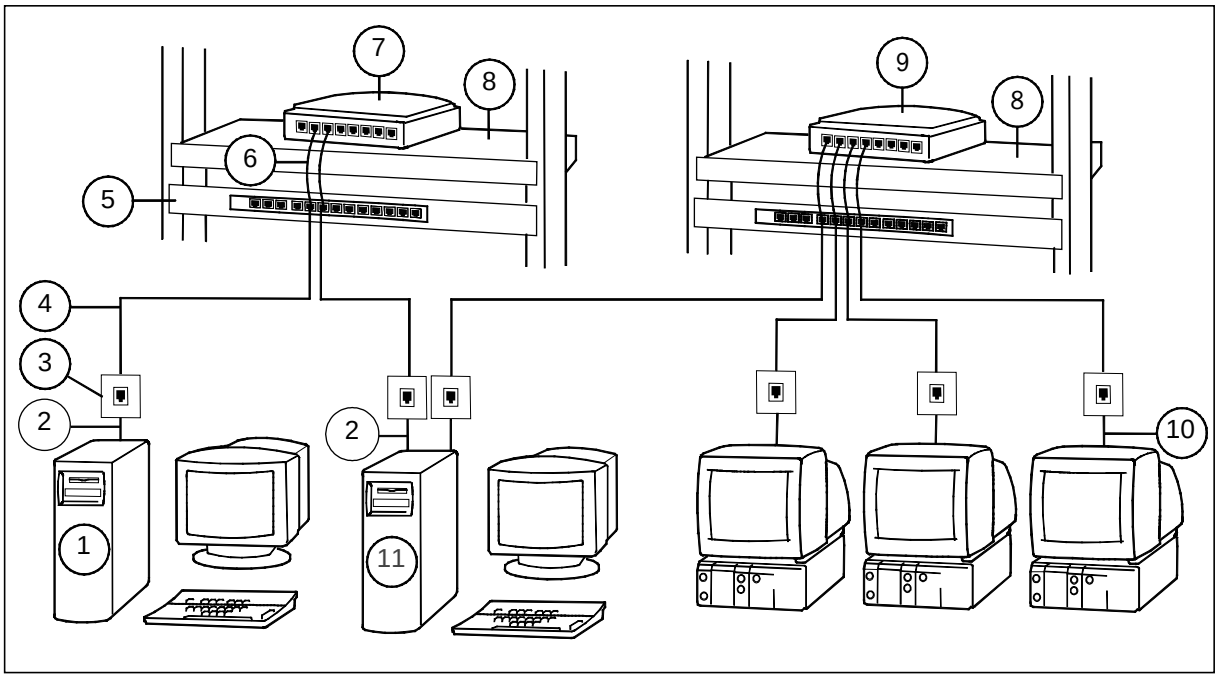


Figure 3-1 Horizontal cabling

(1) ViewStation
(2) Mon/IC-Net Cable
(3) Wallbox
(4) Horizontal cable
(5) Horizontal Patch Panel
(6) Patch Cable
(7) 100 Mbps hub
(8) Shelf
(9) 10 Mbps hub
(10) Mon-Net Cable
(11) S/5 Central

3.3.1 Mon/IC-Net cables

Mon/IC-Net cables are work area cables and carry signals between Centrals or ViewStations and wallboxes both in the monitor network and in the TCP/IP network. The cable type is category 5 unshielded twisted pair, designed to be thin and flexible. The cable is terminated with RJ-45 connectors at both ends, and the coupling method is straight through. Figure 3-2 illustrates a Mon/IC-Net Cable.

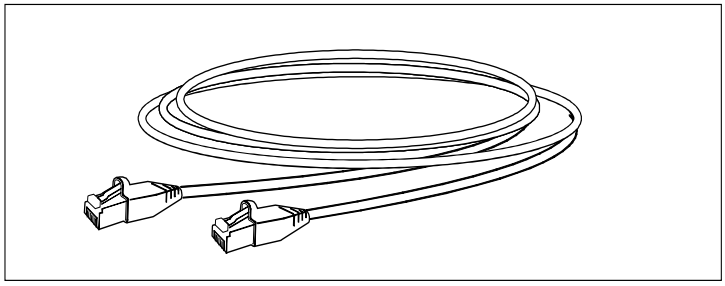


Figure 3-2 Mon/IC-Net Cable

Connecting the Mon/IC-Net cable to Central/ViewStation

1. For the monitor network: connect one cable end to the network connector marked MON on the rear panel of the Central.
   For the Datex-Ohmeda Network: connect one cable end to the network connector marked TCP/IP on the rear panel of the Central/ViewStation.
2. Connect the other end to the connector on the wallbox.

3.3.2 Mon-Net cables

Mon-Net cables are work area cables and carry signals between monitors and wallboxes. The cable type is category 5 unshielded twisted pair, designed to be thin and flexible. The cable is terminated with RJ-45 connectors at both ends, and the coupling method is straight through.

The Mon-Net cable includes an identification plug. The plug contains an EEPROM chip with a unique value to identify the location of the monitor. This location ID is necessary for the network setup. Figure 3-3 illustrates a Mon-Net Cable.

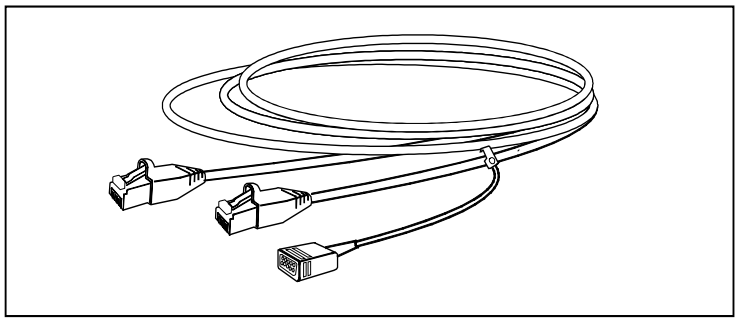


Figure 3-3 Mon-Net cable

Connecting the Mon-Net cable to monitors

1. Connect the connector with the identification plug, to the connector on the rear panel of the monitor.
2. Connect the identification plug to the connector on the rear panel of the monitor (in the Network Board, B-NET).
3. Connect the other end to the connector on the wallbox.

3.3.3 Wallboxes

Wallboxes transfer signals from Mon-Net cables and Mon/IC-Net cables to horizontal cables. The wallbox consists of one slot suitable for an RJ-45 connector. Figure 3-4 illustrates a wallbox.

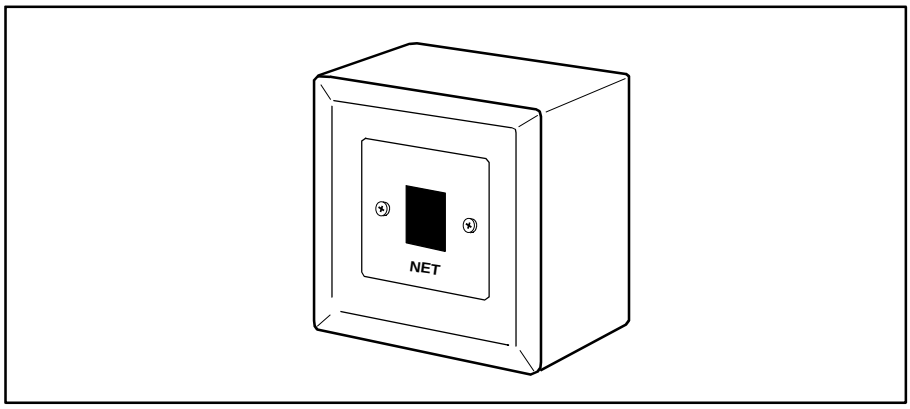


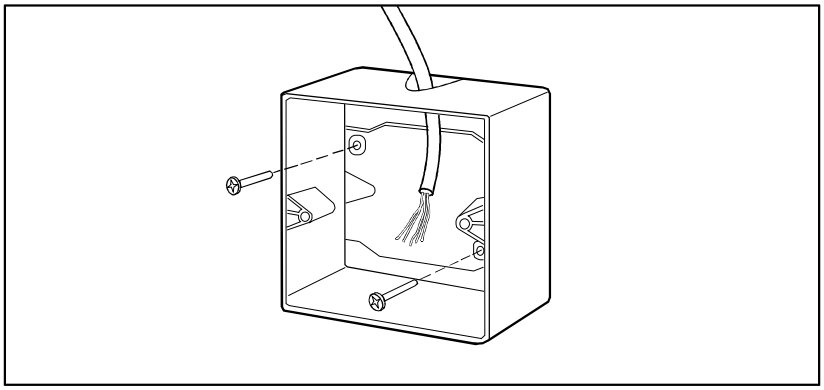
Figure 3-4 Wallbox

Labeling the wallbox

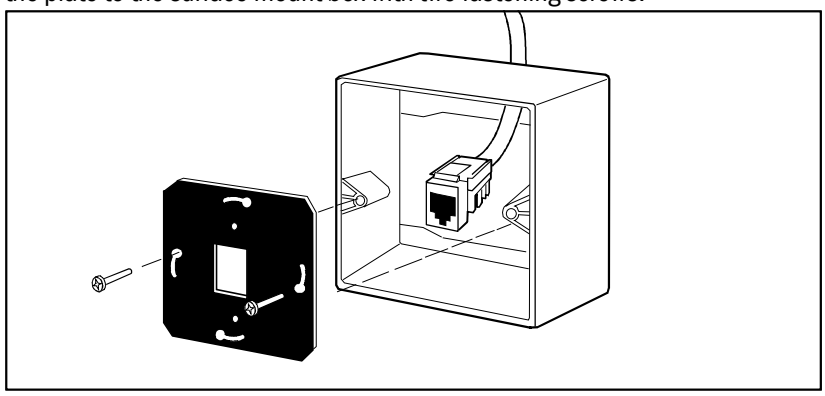
Clearly label all wallboxes on both the attachment plate and the center plate. The labeling method must be flexible to adapt to changes in the wiring. If a labeling method already exists within the hospital, use it.

Installing the wallbox

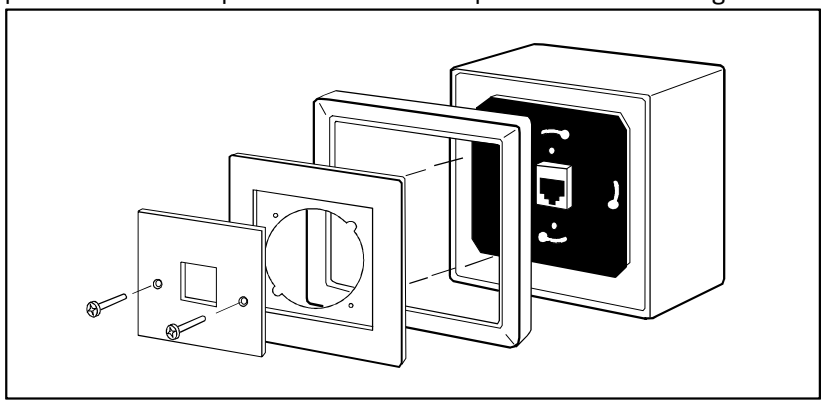
1. Drill two holes in the wall at a height of 1.2-1.3 m (3.9-4.3 ft.) for the surface mount box fastening screws. Pull the horizontal cable through the box. Fasten the box to the wall with two fastening screws.
   NOTE: If you use a wall device outlet box, you do not need the surface mount box.



2. Finish the horizontal cable and attach the RJ-45 connector to the attachment plate. Fasten the plate to the surface mount box with two fastening screws.



3. Place the cover ring and the adaptation ring upon the attachment plate. Pierce the center plate and fasten the plate to the attachment plate with two fastening screws.



3.3.4 Horizontal cables

Horizontal cables carry signals between wallboxes and horizontal patch panels. The term "horizontal" is used because the cable runs horizontally along the floor(s) or ceiling(s).

The cable type is category 5 twisted pair, either unshielded or foiled. The unshielded twisted pair (UTP) is thin and flexible, while the foiled twisted pair (FTP) cable is thick and fixed. The cable jacket can optionally be standard PVC or plenum. Standard PVC cable is flame resistant to 75 °C while plenum cable is fire retardant up to temperatures of 200 °C. Use plenum cable instead of standard PVC in areas where a high degree of fire resistance is required such as heating, ventilation and air conditioning (HVAC) ducts. Technical data sheets for the horizontal cables are included in the appendices. Figure 3-5 illustrates horizontal cables.

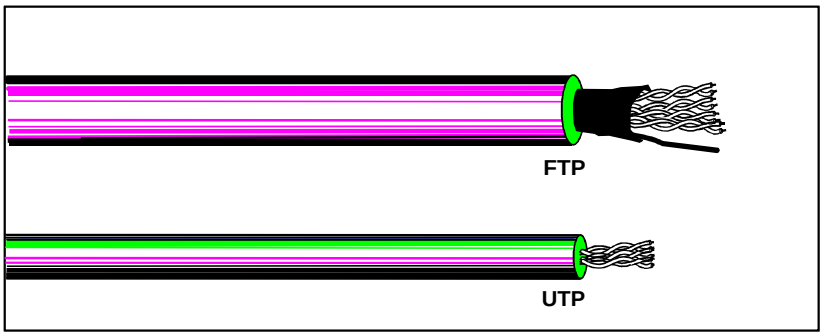


Figure 3-5 Horizontal cables

Labeling the horizontal cables

Clearly label all horizontal cables on both the local and remote end. The labeling method must be flexible to adapt to changes in the wiring. If a labeling method already exists within the hospital, use it.

Routing the horizontal cables

- Route the cables where they will be concealed and protected from possible damage.
- Do not route the cables in a common cabling enclosure. However, you may ground them together in a common cabling enclosure.
- Route the cables at an adequate distance from AC power lines, air conditioning systems and diathermy units, etc., to minimize RF and AC interference. Never route long runs of cables parallel to AC power lines. Table 3-1 illustrates overall separations for horizontal cables.
- Avoid routing the cables outside the building especially when prewiring. If you wish to route cables in this fashion, slope holes bored through exterior walls upward from the outside. Keep the size of the holes as small as possible and seal the exterior surface after you have installed the cables.
- Route the cables without any sharp angles. The bend radius of a UTP type cable should not be less than 8.3 cm (3.3 in.) while the bend radius for a FTP type cable should not be less than 9.3 cm (3.7 in.).
- Route the cables and install the mounting hardware (roughing-in) after installation of the electrical power system, but before thermal insulation and wallboards are installed when performing prewiring.

Table 3-1 Separations for horizontal cables

Voltage source	Type of wire	Separation	Alternative
Electric Supply	Bare wire (any voltage), or open wire over 300 V	1.5 m (5 ft)	None
Electric Supply	Open wire not over 300 V	5 cm (2 in)	(*)
Electric Supply	Wire in separate conduit, in armored or non-metallic shield or ground wire	None	N/A
Radio and television	Antenna lead-in or ground wire	10 cm (4 in)	(*)
Signal or control	All types	None	N/A
CATV	Coaxial cables with grounded shielding	None	N/A
Telecommunication	Drop wire, all types	5 cm (2 in)	(*)
Neon signs	Wire from transformer	15 cm (6 in)	None
Lighting systems	Lighting rods and wires	1.8 m (6 ft)	(**)

(*) When you cannot obtain minimum separations, provide additional protection by means of plastic tube, wire guard, or two layers of vinyl tape extending 5 cm (2 in.) beyond each side of the wiring being crossed.

(**) If you cannot obtain separations of 1.8 m (6 ft.), separations of least 10 cm (4 in.), are permissible if:

— you make all telecommunication, power, and lighting rod ground connections to a common metallic cold water pipe that is properly grounded, or

— you use separately driven ground rods for telecommunications, power, and lighting and bond the ground rods together.

Pulling the horizontal cables

- Pull the cables using 2.5 m (8.2 ft.) long pipes and pull several cables simultaneously.
- Avoid damaging the cables when pulling them. Pulling tension on a TP cable may not exceed 11.3 kg (25 lb.) to prevent stretching the conductors.
- Be particularly careful when pulling the cables through joists and studs (especially metal studs) to prevent damage to the cable shield.
- Install a "pull-string" with the cable runs (e.g., inside wall cavities between floors) to facilitate pulling of future cable runs.
- After the cable is pulled, cut off 1 m (3.3 in.) of the cable end to eliminate possible damage.

Fastening the horizontal cables

- Fasten the cable securely without adversely affecting the insulation.
- Use wire clamps, wire staples, bridle rings and drive rings as fasteners when fastening and also when changing direction of the cable to hold the cable without any sharp angles. Place fasteners according to spacing intervals in Table 3-2.

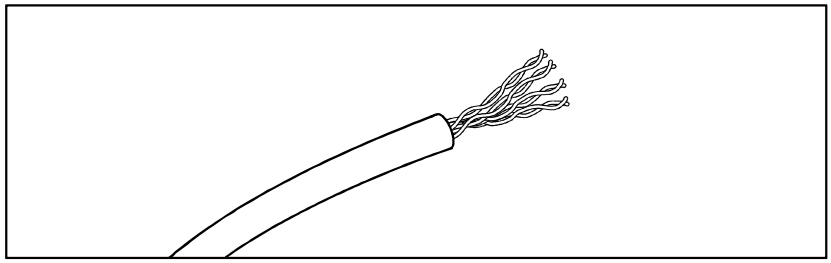
Table 3-2 Typical fasteners and spacing intervals

Fastener	Horizontal spacing	Vertical spacing	Spacing from corner
Wire clamp	40 cm (16 in)	40 cm (16 in)	5 cm (2 in)
Wire staples	18 cm (7 in)	18 cm (7 in)	5 cm (2 in)
Bridle rings	1.2 m (4 ft)	2.5 m (8 ft)	5 to 22 cm (2 to 8.5 in)
Drive rings	1.2 m (4 ft)	2.5 m (8 ft)	5 to 22 cm (2 to 8.5 in)

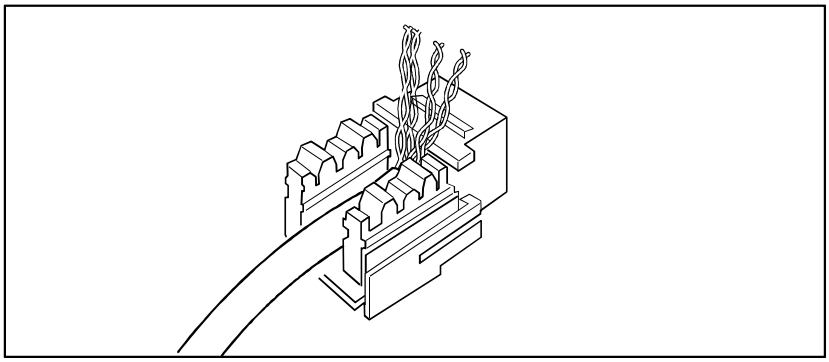
Finishing UTP cables

Finishing UTP cables for wallboxes and patch panels.

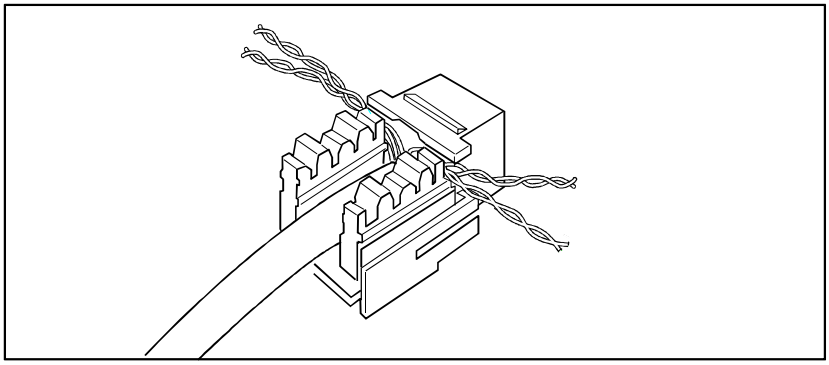
1. Strip off approximately 5.0 cm (2 in.) of insulation from the cable end.



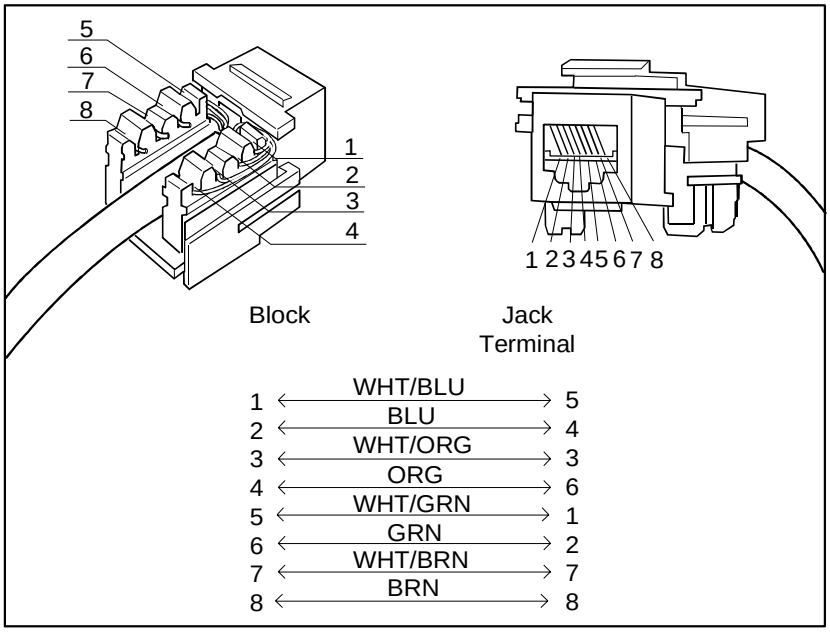
2. Fold the stripped portion upwards and place the cable between the connector blocks.



3. Separate the data wires. Slide orange pair and brown pair, then blue pair and green pair through opposite openings above the connector blocks. Leave the pairs twisted. The maximal untwisting must be less than 13 mm (0.5 in.).



4. Pass the wire pairs along the outer surface of the connector blocks. Lay the wires over the connector pins according to the color code and press the wires into respective pins. Cut off excess wire and remove the fragments.



5. Push back the excess length of cable into the wall cavity.

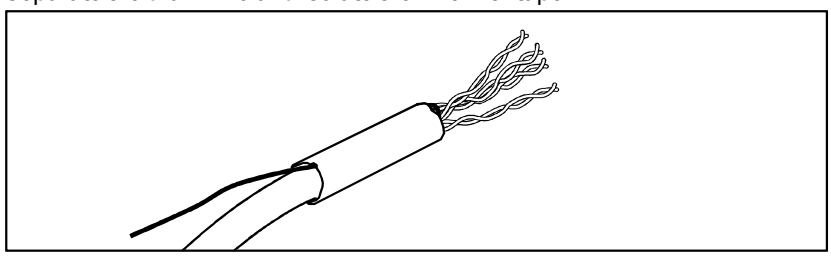
Finishing the FTP cables

Finishing FTP cables for wallboxes:

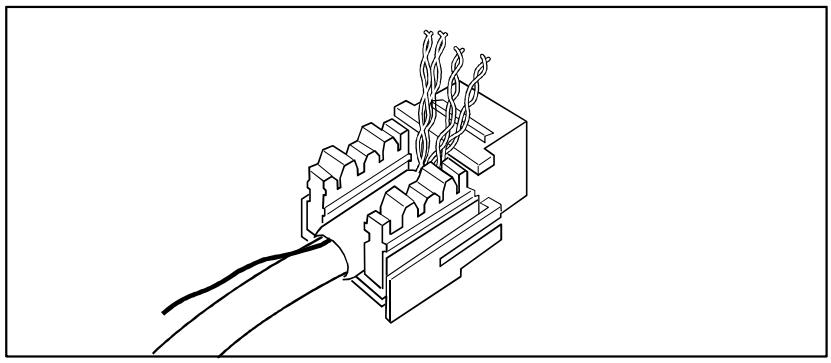
1. Strip off approximately 8 cm (3.1 in.) of insulation and cable shield from the cable end and cut off the drain wire.
2. Finish the FTP Cables for Wallboxes as described above about UTP cables starting from the step 2.

Finishing the FTP cable for Patch Panels

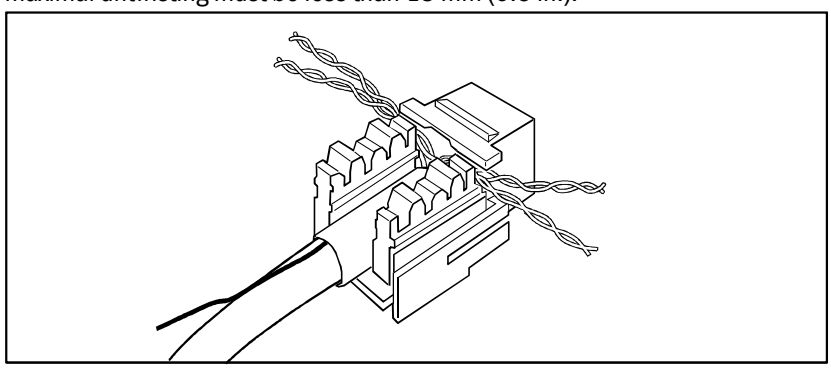
1. Strip off approximately 8.0 cm (3.1 in.) of insulation and shield from the cable end. Separate the drain wire and isolate the wire with tape.



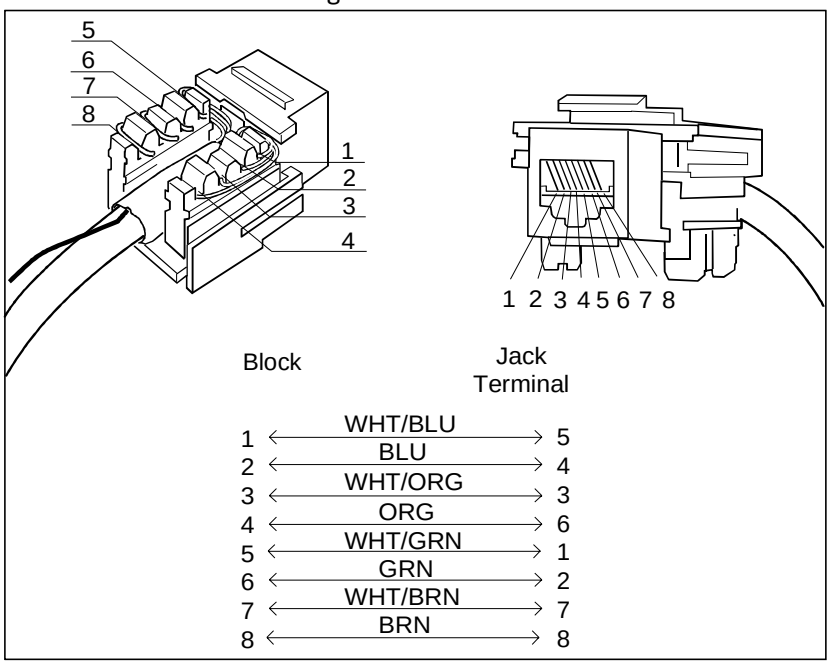
2. Fold the stripped portion upwards and place the cable between the connector blocks.



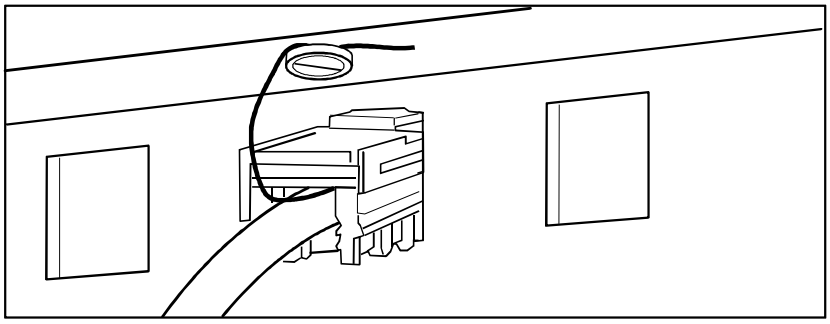
3. Separate the data wires. Slide orange pair and brown pair, then blue pair and green pair through opposite openings above the connector blocks. Leave the pairs twisted. The maximal untwisting must be less than 13 mm (0.5 in.).



4. Pass the data wires along the outer surface of the connector blocks. Lay the wires over the connector pins according to the color code and press the wires into respective pins. Cut off excess wire and remove the fragments.



5. Unscrew the GND connector screw on the patch panel. Wrap the drain wire(s) around the screw in the direction the screw tightens and tighten the screws. The cable shield must make electrical contact with an earth reference at one point only.



6. Push back the excess length of cable into the wall cavity.

3.3.5 Horizontal patch panels

Horizontal patch panels are used with hubs to transfer signals from horizontal cables to patch cables. The panel constitutes of 16 slots suitable for RJ-45 connectors. Figure 3-6 illustrates a horizontal patch panel.

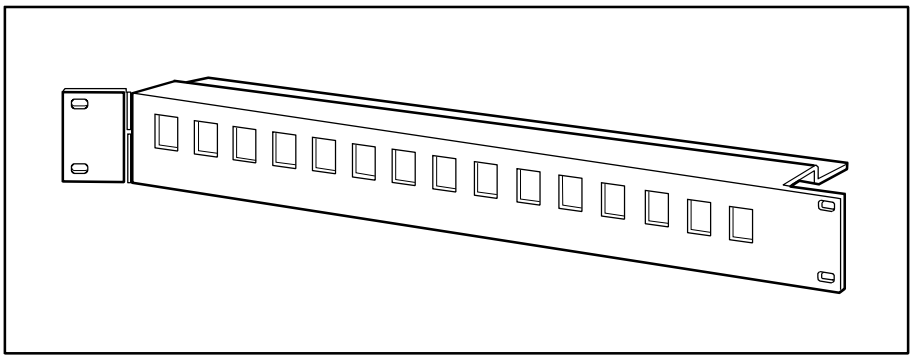


Figure 3-6 Horizontal patch panel

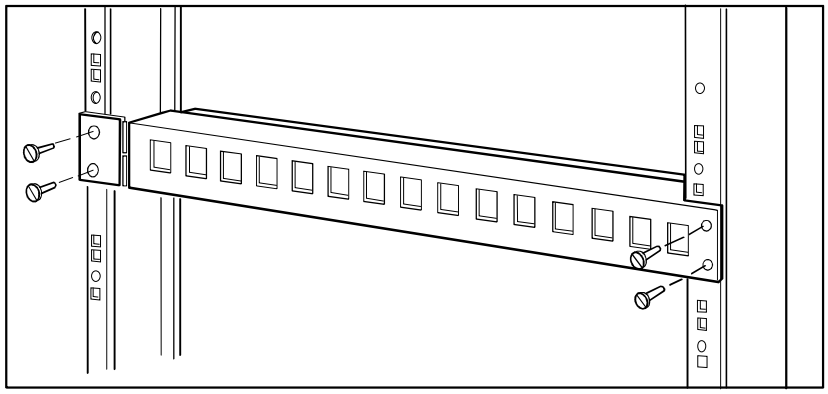
Labeling the patch panel

Clearly label all horizontal patch panel slots. The labeling method must be flexible to adapt to changes in the wiring. If a labeling method already exists within the hospital, use it.

Installing the patch panel

The horizontal patch panel is equipped for direct mounting to 19" rack mounting hardware. Fasten the panel to the rack according to the following procedures.

1. Line up the holes on the edges of the panel with the holes on the rack. Attach the panel to the rack with four fastening screws. Always locate the panel beneath the hub to leave hub signal lights visible.



2. Finish the horizontal cables and complete the panel by firmly pressing the RJ-45 connectors into reserved slots of the panel.

3.3.6 Patch cables

Patch cables are equipment cables that carry the signals between horizontal patch panels and hubs. The cable type is category 5 unshielded twisted pair, designed to be thin and flexible. The cable is terminated with RJ-45 connectors at both ends, and the coupling method is straight through. Figure 3-7 illustrates a patch cable.

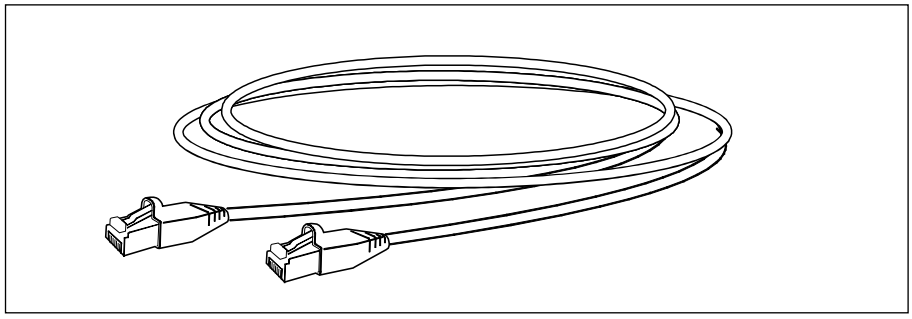


Figure 3-7 Patch cable

Connecting the patch cable

1. Connect one cable end to the connector on the patch panel.
2. Connect the other end to the connector on the front panel of the hub.

3.3.7 Hubs

All patch cables terminate in a hub that is functioning as a multiport repeater.

Four different hubs are recommended, and they can also be purchased locally:

— HUB-8 and HUB-16 are 10 Mbps hubs for the monitor network

— HUB-8FAST and HUB-16FAST are 100Mbps hubs for Datex-Ohmeda Network.

Both hub types can be connected with category 5 cabling.

NOTE: if you purchase locally a hub with selectable speed 10/100 Mbps, make sure you set the speed to 10 Mbps when installed in the monitor network and to 100 Mbps in the TCP/IP network.

NOTE: The Datex-Ohmeda monitors use 10 Mbps network boards, and 10 Mbps hubs should be used in the monitor networks. If a 10/100 Mbps hub with automatic speed detection is used instead, the S/5 Central Monitor Network Board had to be configured to use 10 Mbps exclusively. Use the 3COM NIC Diagnostic program for making the configuration. The program is available at the 3COM EtherCD CD-ROM that has been supplied to you with the Central computer.

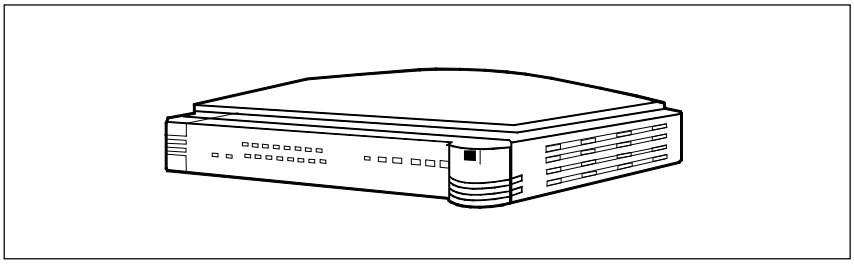


Figure 3-8 Hub

Connecting Hubs together

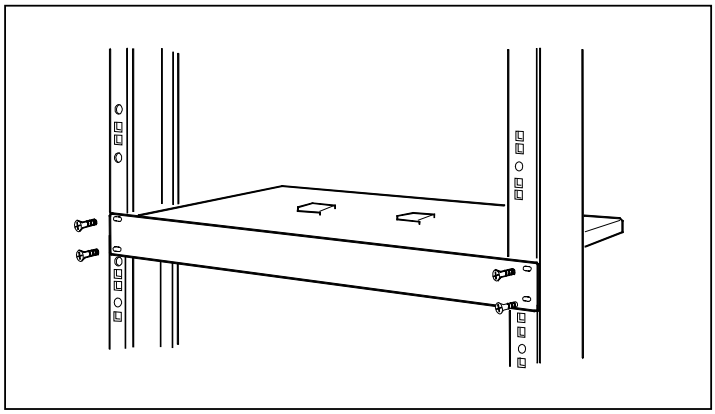
To enlarge the network, connect hubs together with a cross over cable through the RJ-45 ports or with a terminated ThinNet coaxial cable through the BNC ports.

NOTE: The total number of the monitors connected to one monitor network (one Central) must not exceed 32.

Installing the hub and the self

To install the hub to a 19" rack, a shelf is required.

1. Line up the holes on the edges of the shelf with the holes on the rack. Attach the shelf to the rack with the fastening screws, included in the accessory kit.



2. Place the hub on the shelf.
3. Connect the power cable to the power socket on the rear panel of the hub and to the wall socket.

3.4 Vertical cabling

Use vertical cabling to connect different floors to each other as illustrated in Figure 3-9.

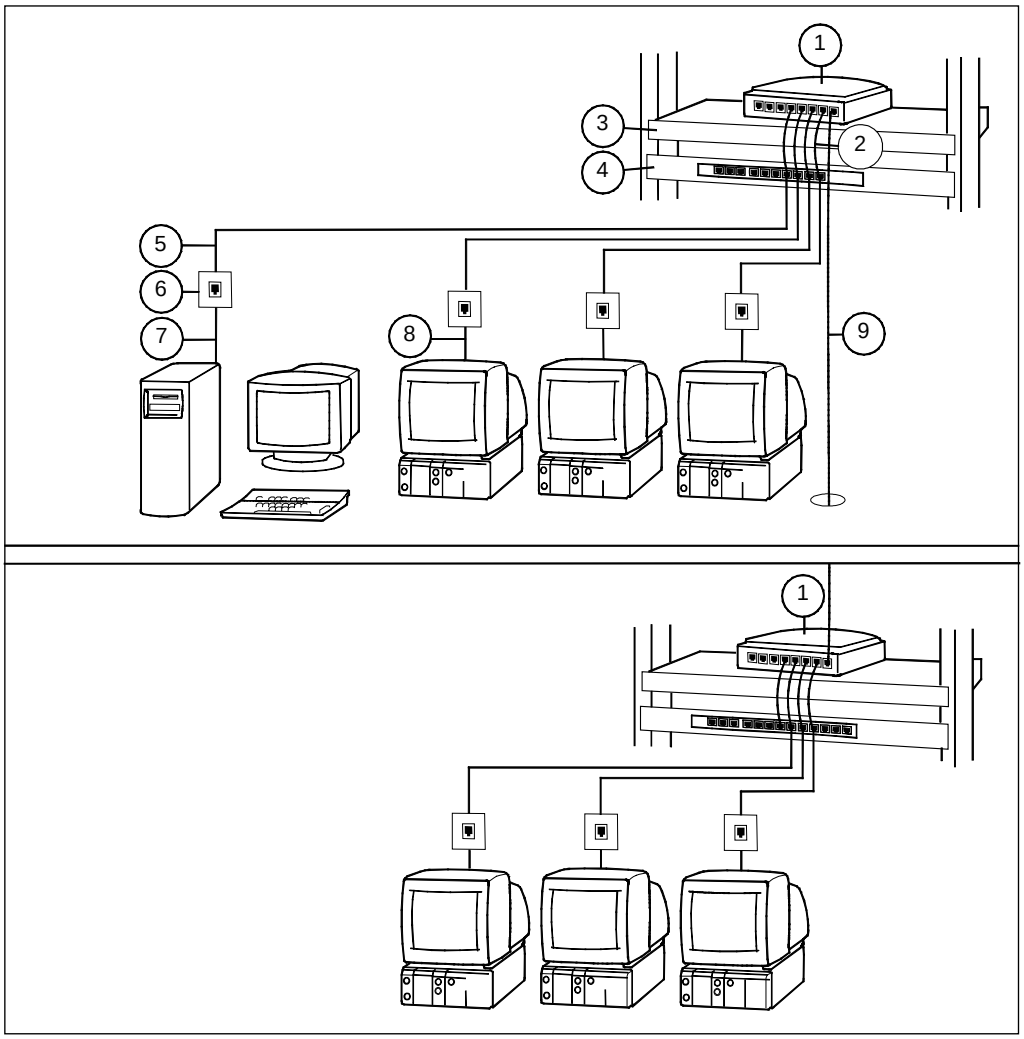


Figure 3-9 Vertical cabling

(1) 10 Mbps hub

(2) Patch cable

(3) Shelf

(4) Horizontal patch panel

(5) Horizontal cable

(6) Wallbox

(7) Mon/IC-Net cable

(8) Mon-Net cable

(9) Vertical cable

Vertical cables

Vertical cables carry signals between patch panels. The term "vertical" is used because the cable runs vertically along the ceiling(s) of a building. The cable type is category 5 foiled twisted pair (FTP) or Belden 9907 coaxial. Figure 3-10 illustrates vertical cables.

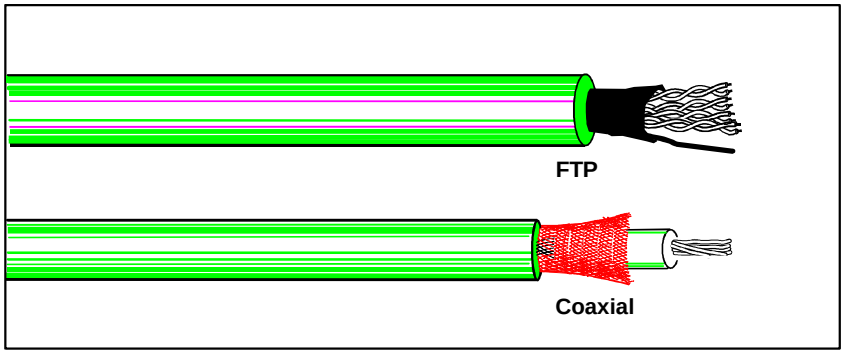
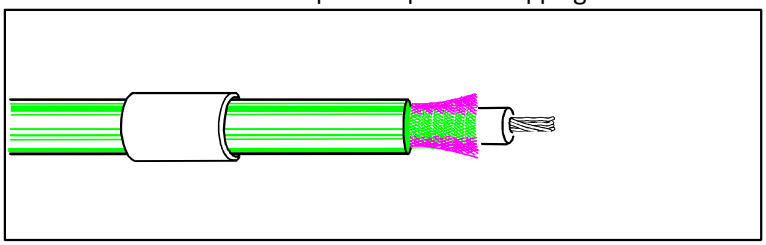


Figure 3-10 Vertical cables

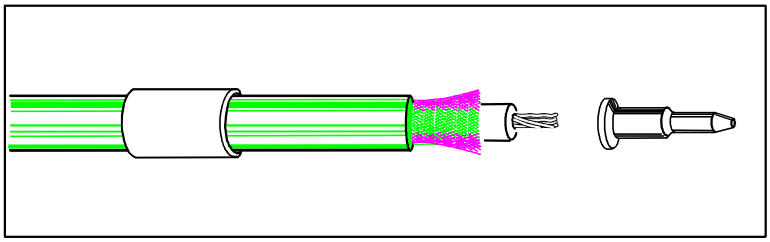
NOTE: If the environment is electrically noisy, you can use optical fiber as a vertical cable. For further information, consult your local distributor.

Finishing coaxial cables

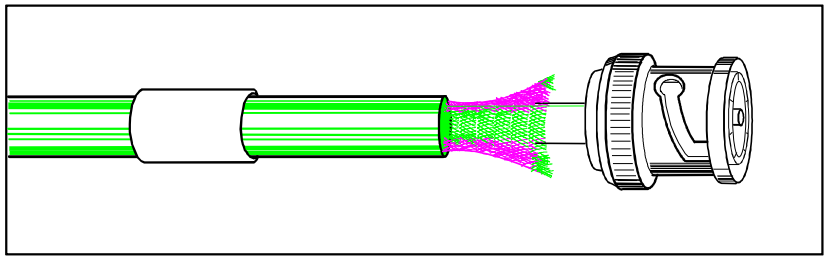
1. Strip off approximately 1.5 cm (0.6 in.) from the cable end and slide the sleeve of the BNC connector over the cable and past the point of stripping.



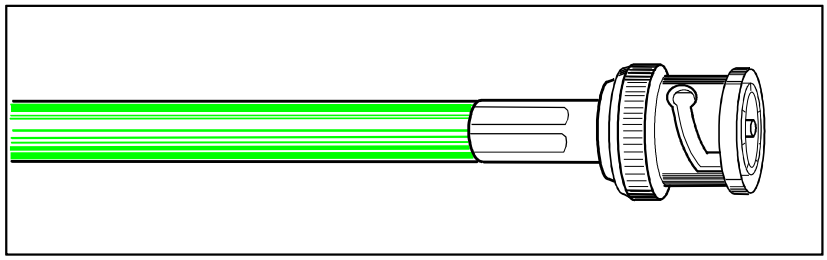
2. Peel back the braided portion so that none of the strands are near the center conductor. Slide the gold pin over the center conductor. Make sure that all the wires of the center conductor are seated inside the gold pin. Crimp the gold pin.



3. Slide the BNC ferrule over the gold pin till it rests firmly against the rolled back braided portion. No part of the braided shield must pass inside the ferrule.



4. Slide the sleeve up over the ferrule of the BNC connector. All of the braided shield should be in between the ferrule and the sleeve. Crimp down the sleeve.



3.5 Cabling examples

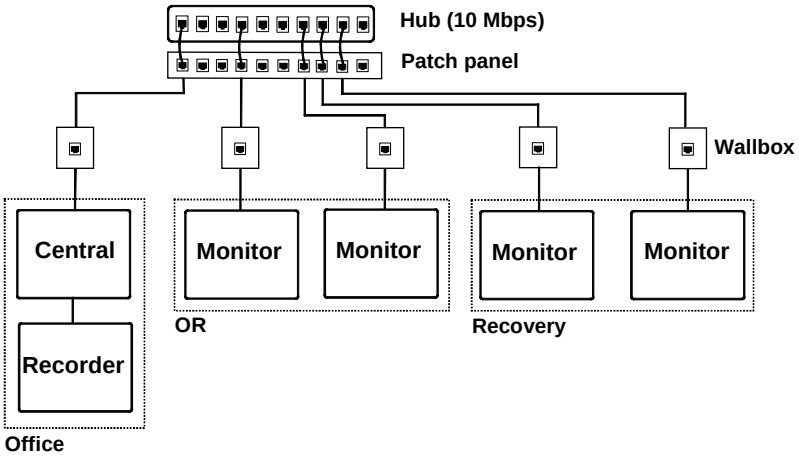


Figure 3-11 Cabling example: A simple Datex-Ohmeda Monitor Network.

- All monitors and the Central are connected to the same 10 Mbps hub.
- Central is situated in the office and equipped with a recorder.
- Two monitors are in the operating room.
- Two monitors are in the recovery room.

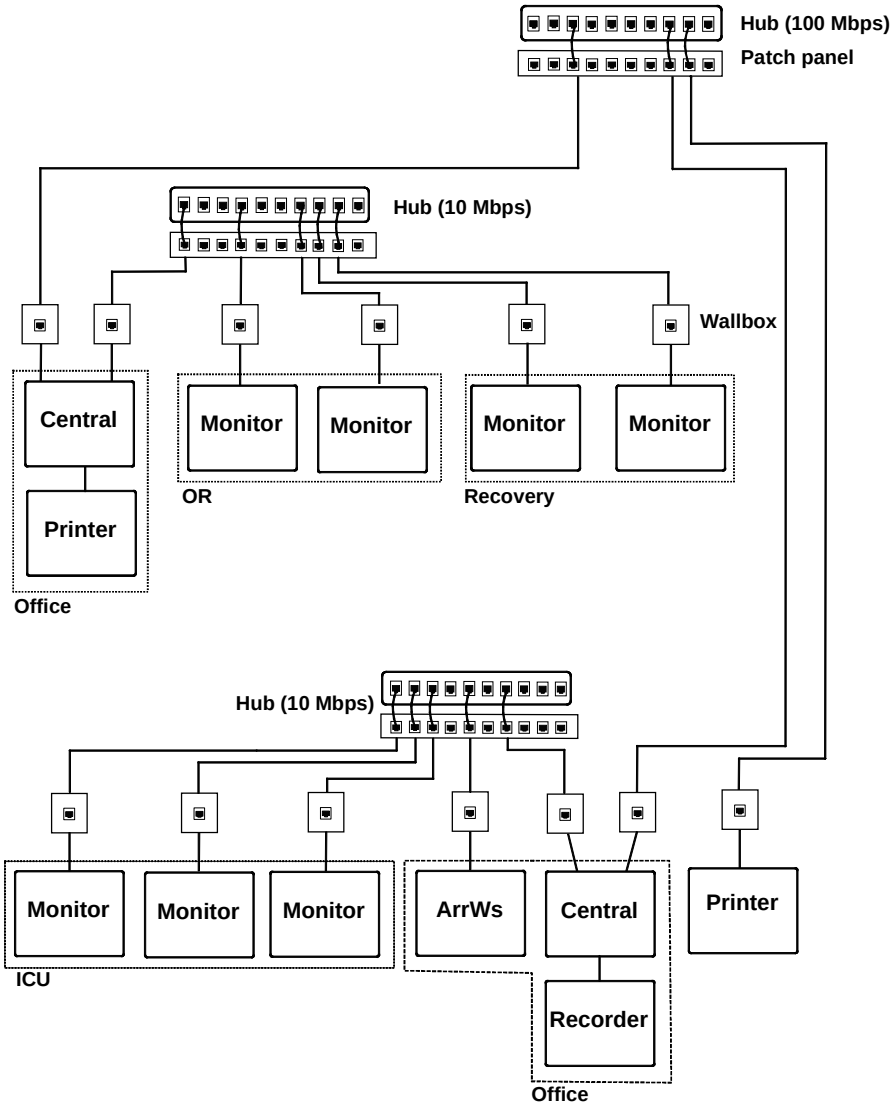


Figure 3-12 Cabling example: A Simple Datex-Ohmeda Network (TCP/IP)

- Two Centrals, one in each department's office and one arrhythmia workstation
- Two monitor networks: 1st one with two monitors in operating room and two in recovery room, and a printer connected to the Central.
  The 2nd one with three monitors in ICU, and arrhythmia workstation and the central with a strip-chart recorder in the office.
- All monitors and ArrWS are connected to 10 Mbps hub.
- Centrals are connected both to the10 Mbps and 100 Mbps hub.
- A laser printer is connected directly to the 100 Mbps hub.

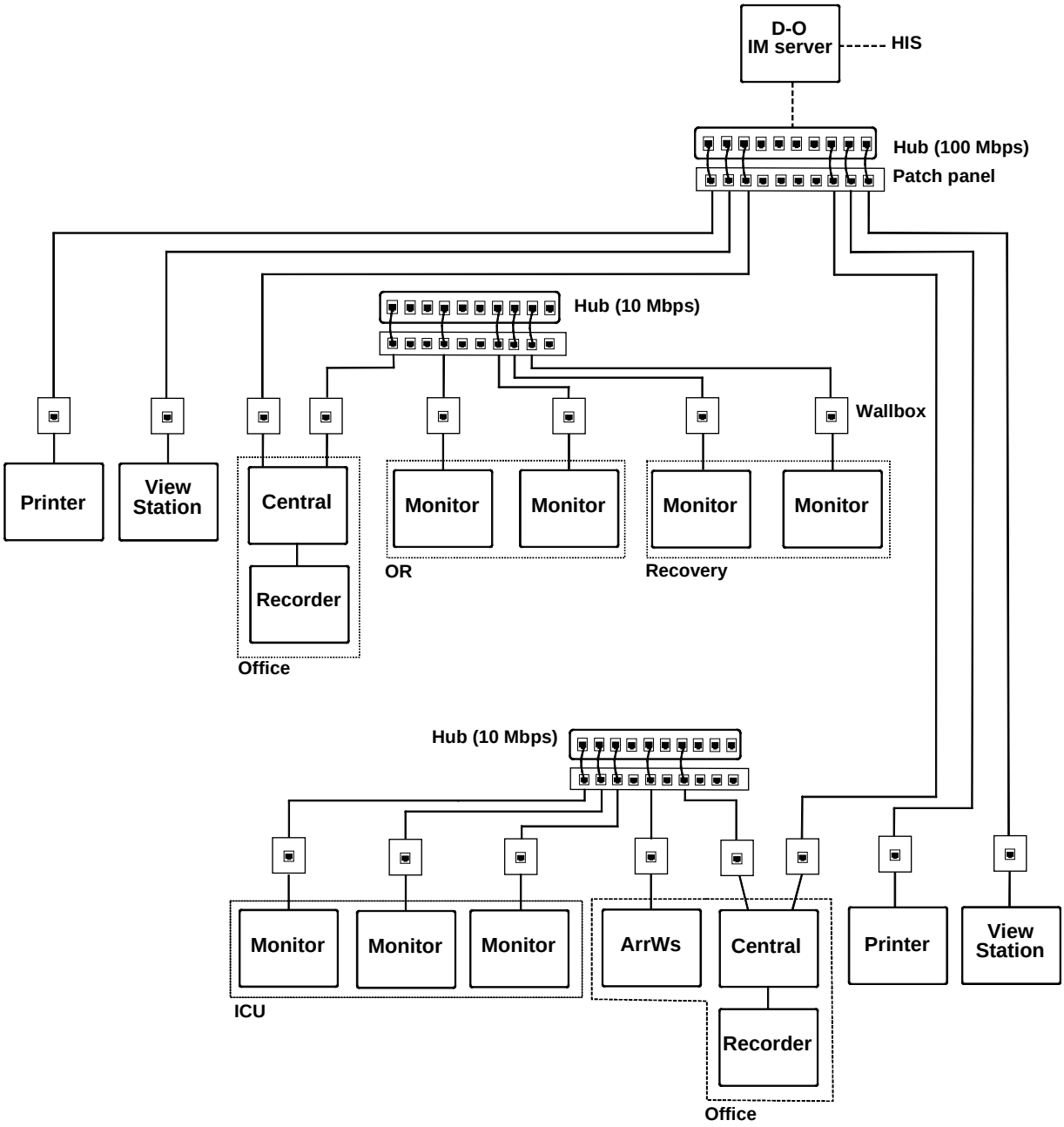


Figure 3-13 Cabling example: A more complex Datex-Ohmeda Network (TCP/IP)

- Two monitor networks, both Centrals have their own recorders. All the monitors are connected to the 10 Mbps hubs and Centrals are connected both to the 10 Mbps and 100 Mbps hubs
- Two ViewStations connected to a 100 Mbps hub.
- Two laser printers connected to 100 Mbps hub
- The Datex-Ohmeda Network (TCP/IP) can be connected to the hospital information system (HIS) via a Datex-Ohmeda Information management server via the 100 Mbps hub

3.6 Post-installation testing

The post-installation testing includes a physical cabling control and a functional cabling control.

Physical cabling control

The physical cabling control is necessary to discover any physical faults within the cabling. Perform the control by strictly comparing the original plan (documentation) to the actual cabling.

Functional cabling control

The functional cabling control is necessary to discover any functional faults within the cabling. Perform the control using a cable scanner suitable for testing Category 5 cable systems. The tester should give a comprehensive diagnostic view of the network by measuring the following set of features.

- Near- end crosstalk
- Attenuation
- Length
- Attenuation to crosstalk ratio
- Impedance
- Loop resistance
- Capacitance

It should also be possible to save and print the measurement results.

E.g. PentaScanner™ and Super Injector™ by Microtest, see Figure 3-14, fulfill these needs.

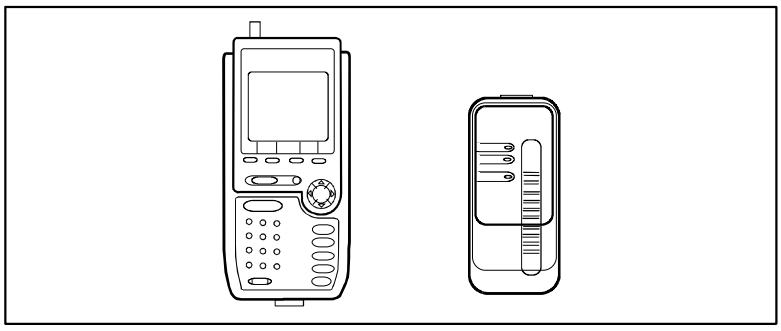


Figure 3-14 PentaScanner and Super Injector

For performing the tests, finding faults and their solutions, refer to the scanner's documentation.

Certification report

Make sure you have a complete record of the cabling tests and the certification that cablings function properly.

Attach a copy of the test report to this folder or to a separate installation folder.

4 INSTALLING CENTRALS AND VIEWSTATIONS

4.1 Components

The main components of the Central and ViewStation are illustrated in the following figure:

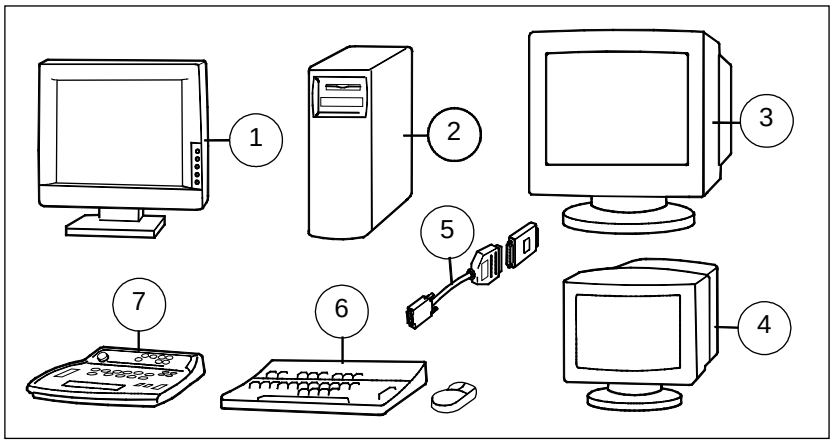


Figure 4-1 Main components of the S/5 Central and ViewStation

(1) Patient Screen, D-CFLT15

(2) Network Computer, C-NTNET

(3) Patient Screen, D-VIC17

(4) Status Screen, D-VIC15

(5) PC keyboard and a mouse

(6) S/5 Central Keyboard, K-CENTRALB

Network computer is equipped with two commercial network boards and a Datex-Ohmeda specific display controller board, B-CDISP. Also the operating system, Windows NT, and the network software (S-CNET99 for Centrals, S-VNET99 for ViewStations) are pre-installed. The Central is equipped with the smart key, N-ICXX, where XX defines the number of the beds which can be connected to the Central.

Additionally the package should include the User's Reference Manual, power cable, connection cables, and back-up disks of the operating system and the software

NOTE: Old display board, B-CDHI, cannot be used with the S/5 Central.

NOTE: Network Manager configuration does not include Patient Screen, S/5 Central Keyboard nor B-CDISP board.

4.2 Unpacking

1. Confirm that the packing boxes are undamaged. If any of the boxes is damaged, contact the shipper.
2. Open the top of the boxes and carefully unpack all components.

3. Confirm that all components are undamaged. If any of the components is damaged, contact the shipper.
4. Confirm that all components you have ordered are included. If any of the components is excluded, contact your local distributor.

4.3 Placing

When placing the Central or ViewStation, consider the following aspects.

– Light: bright lights may disturb observing the information displayed.
– Space: leave space for ventilation to prevent the device from heating.
– Power requirements: use extra separating transformer in medical areas.
– Electromagnetic and radio frequency interference.
– Variations in atmospheric pressure.

Refer also to the technical specifications delivered with the computer and displays .

WARNING **The Central and the hub are non-medical electrical equipment. Do not locate this type of equipment in a medically used room. If locating this type of equipment in a medically used room is necessary, it shall be supplied from an additional transformer providing at least basic isolation (isolating or separating transformer).**

4.4 Connections

NOTE: The rear panel connectors may be slightly different in different PC models.

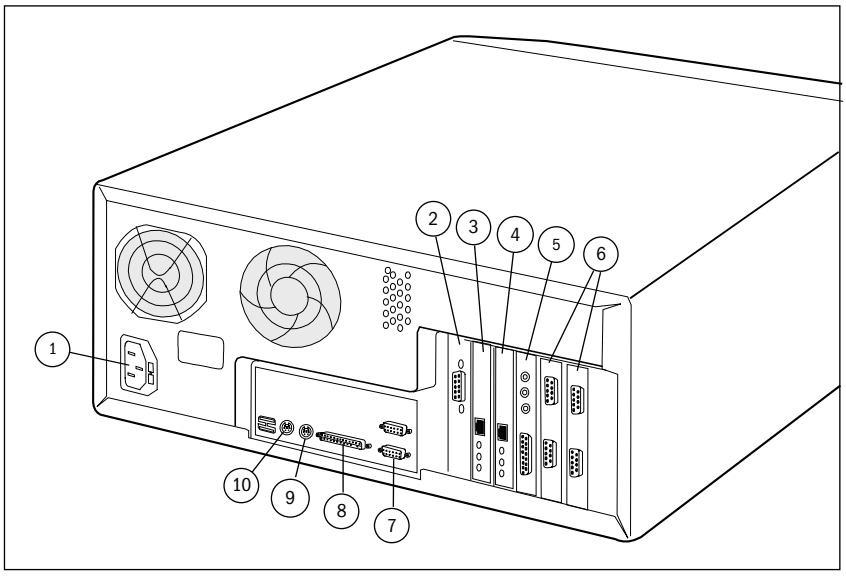


Figure 4-2 Typical Connectors on the Network Computer Rear Panel

(1) Power cord plug

(2) Display data cable connector for Status Screen

(3) Datex-Ohmeda Network (TCP/IP) cable connector

(4) Monitor Network (Mon) cable connector (not in the ViewStations)

(5) Audio cable connector

(6) Display data cable connector for Patient Screen(s)

(7) Serial port for the Smart Key (not in the ViewStations)

(8) Parallel port for printer or recorder cable connector

(9) Mouse cable connectors

(10) Keyboard cable connector

NOTE: If you have two independent Patient Screens, you need two D-CDISP boards.

Connecting the Central to the line power source

Preferable use an uninterruptible power supply (UPS):

1. Connect the UPS input power cable to the UPS power inlet and to the power outlet.
2. Connect the UPS output power cable to the power inlet on the rear panel of the Network Computer and to the UPS power outlet.

If the devices are placed in the medical room, connect them using an appropriate transformer.

Connecting the keyboards

- Connect the keyboard cable to the keyboard connector on the rear panel of the Network Computer, see Figure 4-2.

It is possible to connect only one keyboard at a time. The PC keyboard is used during installation, and to operate Network Manager, and the S/5 Central keyboard, K-CENTRALB, is used to operate S/5 Central in daily use.

The keyboard is selected in the System Setup. If the keyboard is changed remember change the setting, too.

Connecting the mouse

- Connect the mouse cable to the mouse connector on the rear panel of the Network Computer.

Connecting the loudspeakers

- Connect the loudspeakers (part of the Patient Screen) to the audio connector on the rear panel of the Network Computer.

NOTE: The audio knobs at the lower part of display's front panel are covered to prevent the accidental silencing of the alarm sounds. Make sure you do not turn the sound off when making other display adjustments.

WARNING **Always make sure that audio cables are properly connected.**

WARNING **Never turn the volume off from the alarm loudspeakers.**

Connecting the Patient Screen

1. Connect the display data cable to any display connector on the Display Controller Board, B-CDISP, on the rear panel of the Network Computer.
2. Connect the display power cable to the wall socket. In medical area use an appropriate separating transformer.

The B-CDISP board has two connectors. You can connect another Patient Screen to the same board as a slave screen (the same information is displayed on both of the screens). To get two independent Patient Screens you need two B-CDISP boards, and one of them must be configured as primary and the other as secondary display board. See Part II for details of the product.

In the System Setup, you must select whether you use the CRT or LCD display.

Connecting the Status Screen

1. Connect the display data cable to the display connector on the rear panel of the Network Computer.
2. Connect the display power cable to the display power outlet on the rear panel of the Network Computer.

Status Screen pages and columns are configured in the System Setup.

NOTE: Status Screen should be configured for 1024 x 768 pixel resolution with large fonts. Use the NT's Display Setup to configure the Status Screen.

Connecting the Smart Key

The Smart Key is pre-installed.

- Connect the Smart Key to the serial port on the rear panel of the Network Computer.

Connecting the Central to the Datex-Ohmeda Monitor Network

- Connect the Mon/IC-Net Cable to the network connector (indicated "Mon.") on the rear panel of the Network Computer, and to 10 Mbps hub.

Configure the monitor network with the program.

Configure the monitor views using the Datex-Ohmeda View Setup program.

Connecting the Central/ViewStation to the Datex-Ohmeda Network (TCP/IP)

- Connect the Central to the Datex-Ohmeda network (TCP/IP) using the network board indicated "TCP/IP".
- Connect the ViewStations to the 100Mbps hub.

Configure the Datex-Ohmeda Monitor Network (TCP/IP) with Network Setup and views seen from each ViewStation with the View Setup.

Connecting a recorder

1. Connect the recorder cable to the parallel connector on the rear panel of Network Computer, see Figure 4-2, and to the connector on the recorder's rear panel.
2. Connect the recorder's power cable to the power inlet and to the wall socket.

Connecting a printer

Local printer

1. Connect the printer cable to the connector on the rear panel of Network Computer, and to the connector on the printer's rear panel. Secure the connections with finger screws.
2. Connect the printer's power cable to the power inlet and to the wall socket.

Network printer

If the printer is going to be shared by several Centrals and/or ViewStations, it is recommended to connect the printer to Datex-Ohmeda network (TCP/IP). This installation requires that the printer is equipped with a network board. The printers purchased from Datex-Ohmeda have the network board installed. If you use a locally purchased printer, install the network board (HP JetDirect) according to the instructions provided by the printer manufacturer.

5 CONFIGURING

Before configuring the Datex-Ohmeda S/5 Centrals and ViewStations all cablings must be done and tested, and all the equipment must be installed, see chapters 0 and 0. If any changes in the operation system configuration are required, see chapter 7.

5.1 Setup files and tools

Several configuration files define the configuration of the monitor network:

— `NETWORK.AIC` defines the network configuration of the system. This file has to be the same for each Central and ViewStation that are connected to the same Datex-Ohmeda Network (TCP/IP). `NETWORK.AIC` file is edited with the Network Setup software.

— `MONVIEWS.AIC` defines which monitors are shown on the Patient and Status Screens on each Central and ViewStation. Each Central and ViewStation uses its own `MONVIEWS.AIC` file. `MONVIEWS.AIC` file is edited with the View Setup software.

— `SETUP.AIC` defines the general configuration of each Central and ViewStation. Each Central and ViewStation uses its own `SETUP.AIC` file. `SETUP.AIC` file is edited with the System Setup software.

These files are located in the `D:\CENTRAL\SETUP` folder of the Central or ViewStation. The files will be copied to `D:\CENTRAL\PROGRAM` directory during the system startup.

- After each part of the configuration is complete, print a hard copy of the setup by clicking ***File*** and ***Print***.
- Save the hard copy in the installation folder.
- After the entire configuration is complete, restart the Central/ViewStation, and run the DOCCheckup software (see page 68).

5.1.1 When to use which setup software?

Network Setup software has to be used every time when:

– a new network is installed.
– a new Central or ViewStation is added in the Datex-Ohmeda Network (TCP/IP).
– a monitor is added in the Datex-Ohmeda Monitor Network.
– a monitor is removed from the Datex-Ohmeda Monitor Network.
– networks have to be connected to/removed from each other.

For instructions, see chapter 5.2.1.

View Setup software has to be used every time when:

– a new network is installed, configuring the view setup for the first time
– a monitor is added to a view or page seen at the Central or ViewStation.
– a monitor is removed from a view or page seen at the Central or ViewStation.

For instructions, see chapter 5.2.2.

System Setup software has to be used every time when:

– a new network is installed.

- a laser printer or recorder is installed.
- alarm settings are changed.
- display settings are changed.
- password is changed.
- monitor-to-monitor communication is enabled/disabled.
- patient data path is changed.
- menu paths for record keeping functions are changed.

For general instructions, see chapter 5.2.3 and for recorder installation, see chapter 1 and for printer installation, see chapter 7.2.

NOTE: Settings are checked during the system startup only, and become active only after the Central or ViewStation software has been restarted.

5.2 Setup Procedure

Since the Centrals and ViewStations rely on the network setup file to get information on the network configuration of the Datex-Ohmeda Network, it is very important that all Centrals and ViewStations always have access to identical `NETWORK.AIC` files. The following procedure is recommended when configuring the network configuration:

1. Define the first Central you install as a Primary Central of the system.
2. Use the Network Setup always on the Primary Central only, and then copy the updated `NETWORK.AIC` files in the `CENTRAL\SETUP` folders of the other Centrals and ViewStations in the system.
3. After the network setup file has been copied to other Centrals and ViewStations, make ViewSetup and SystemSetup adjustments for each Central and ViewStation.
4. Run the DOCCheckUp software on each Central and ViewStation (see chapter 9.2).

5.2.1 Network setup

The Network Setup allows you to

– define network properties, i.e. the network name and type, and PC name or IP address

– add and remove monitors to/from a network

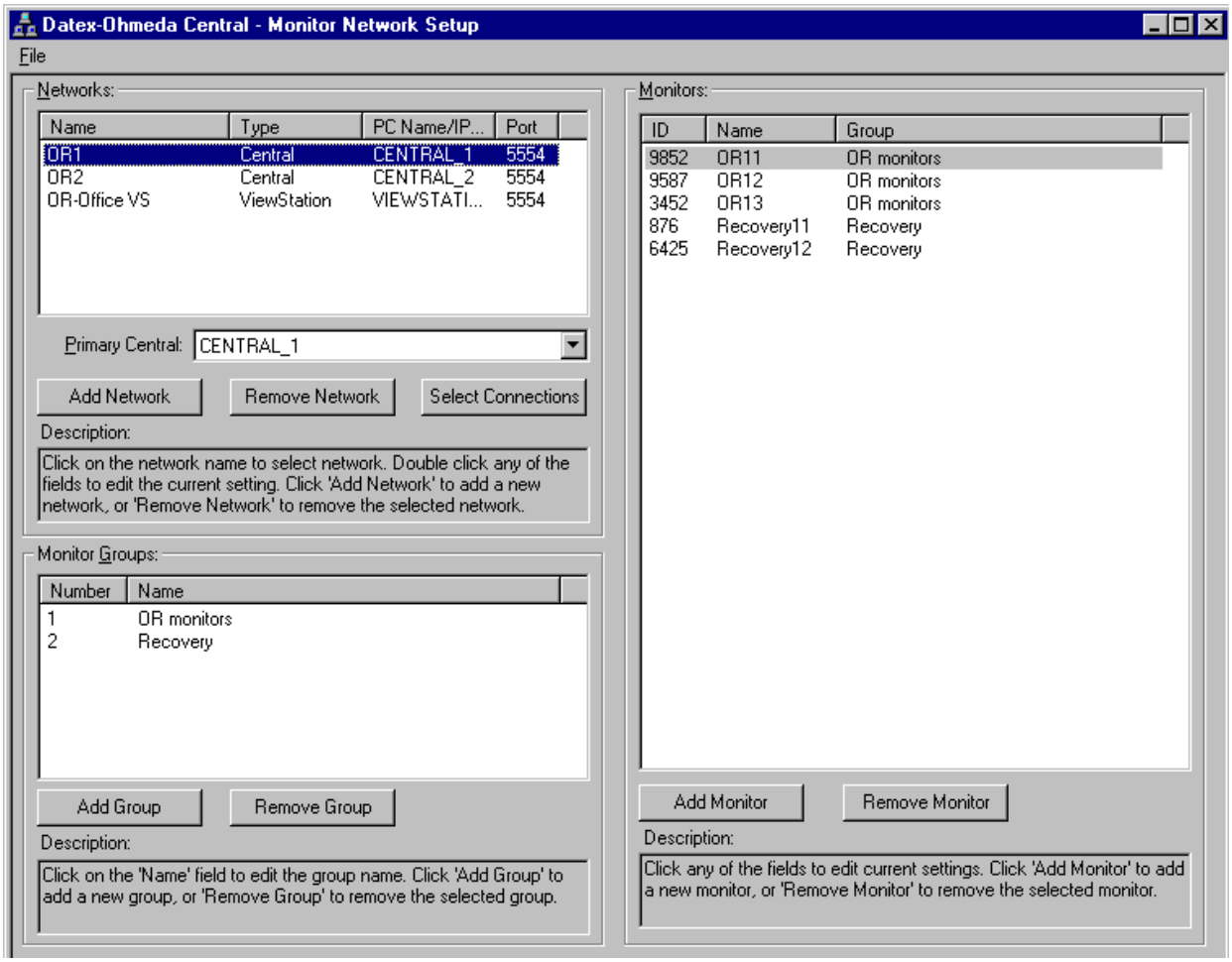
– make groups to enable use of different user modes in monitors e.g. in operation room and recovery

– connect monitor networks together

NOTE: Use the Network Setup always on the Primary Central only. Remember to copy the updated `NETWORK.AIC` file in other Centrals and ViewStations after the editing.

To start the setup program:

- Click ***Central Setup*** icon and select ***Network Setup***.



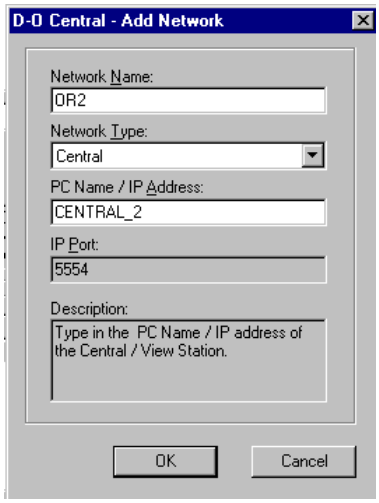
Selecting the Primary Central

By default the CENTRAL_1 is the primary Central. To change it:

1. Click the pull down menu beside the window ***Primary Central***.
2. Select the primary Central from the list.

Adding Centrals or ViewStations to the network

You can add up to four Centrals and ViewStations to the network:



1. Click ***Add Network***.
2. Give the descriptive name for the network, e.g. the department name.
3. Select the network type, either Central or ViewStation, by clicking the pull down menu.
4. Give the PC name (CENTRAL_1, etc.), or the IP address.

The PC name and IP address are defined during Windows NT installation. Make sure you use the same PC names or IP addresses. Preferably use the PC name instead of fixed IP address!

IP port is fixed (5554).

NOTE: One of the Centrals in the network should be defined as Central_1. All Centrals are defined to be Central_1 when they are sent from the factory. The PC names of the Centrals and ViewStations can be changed in Windows NT by clicking ***Control Panel - Network - Identification*** -***Change***.

If you want to edit these pieces of information, double click the desired item on the list.

To remove a Central or ViewStation:

- Click ***Remove Network***.

Adding, removing and editing monitor groups

Grouping the monitors enables you to store and load specific user modes for a group of monitors from the network. By default, all the monitors with the same software (e.g. S-ARK97) use the same user modes. If the monitors with the same software are desired to have different user modes, different groups must be defined, and the user modes defined during the monitor configuration must be saved in to the network (refer to the monitor's manuals).

Monitors with different software versions, e.g. S-ARK95, S-ARK97 and S-ICU97 cannot use the same user modes.

To add a group:

1. Click ***Add Groups***.
2. Give the group number and name.

You can edit the group name and number by double clicking them.

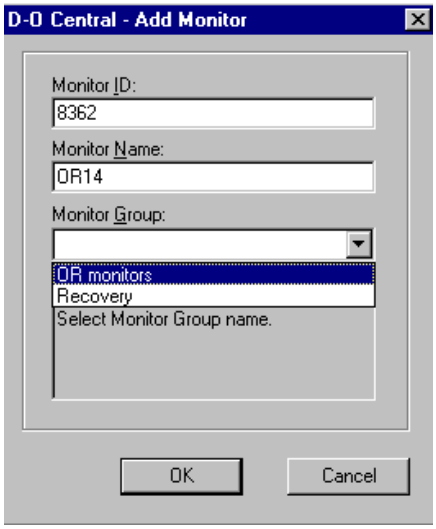
To remove a group:

- Select ***Remove Group***.

Adding, removing, and editing monitor locations

All the monitors in the network must be identified in the Network Setup to enable networking. Add all the monitors to all Centrals, when configuring the primary Central:

1. Highlight the Central of those added in the 'Networks' field.
2. Click ***Add Monitor*** in the field of 'Monitors'.
3. Give the monitor ID number. This number is defined by the location ID plug of the Mon-Net cable, which must be connected to the ID connector on the monitor's Network Board, B-NET.
4. Name the monitor.
5. Select the group which the monitor belongs to.



If you want to edit these pieces of information, double click the desired item on the list.

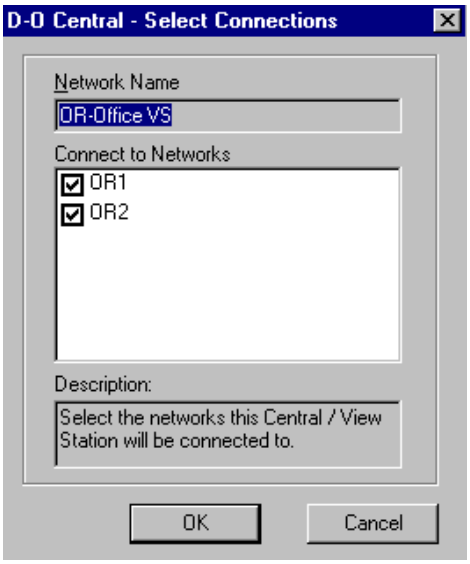
To remove a monitor:

- Click ***Remove Monitor***.

Connecting networks together

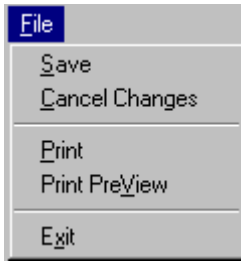
Connecting the networks together enables the monitor-to-monitor communication between monitors residing in different monitor networks, and defines which Centrals can be viewed from a ViewStation.

1. Highlight the Central/ViewStation in the 'Networks' field.
2. Click ***Select Connections***.
3. Select which of the Centrals are connected to the Central/ViewStation in question.



Saving the network setup

1. Select ***File-Save*** to save the configuration into the `NETWORK.AIC` file.
2. Preview the setup by selecting the ***Print PreView***.
3. Print the document of the setup and file it for the later troubleshooting etc. purpose.
4. Exit the Network Setup by selecting ***Exit***.

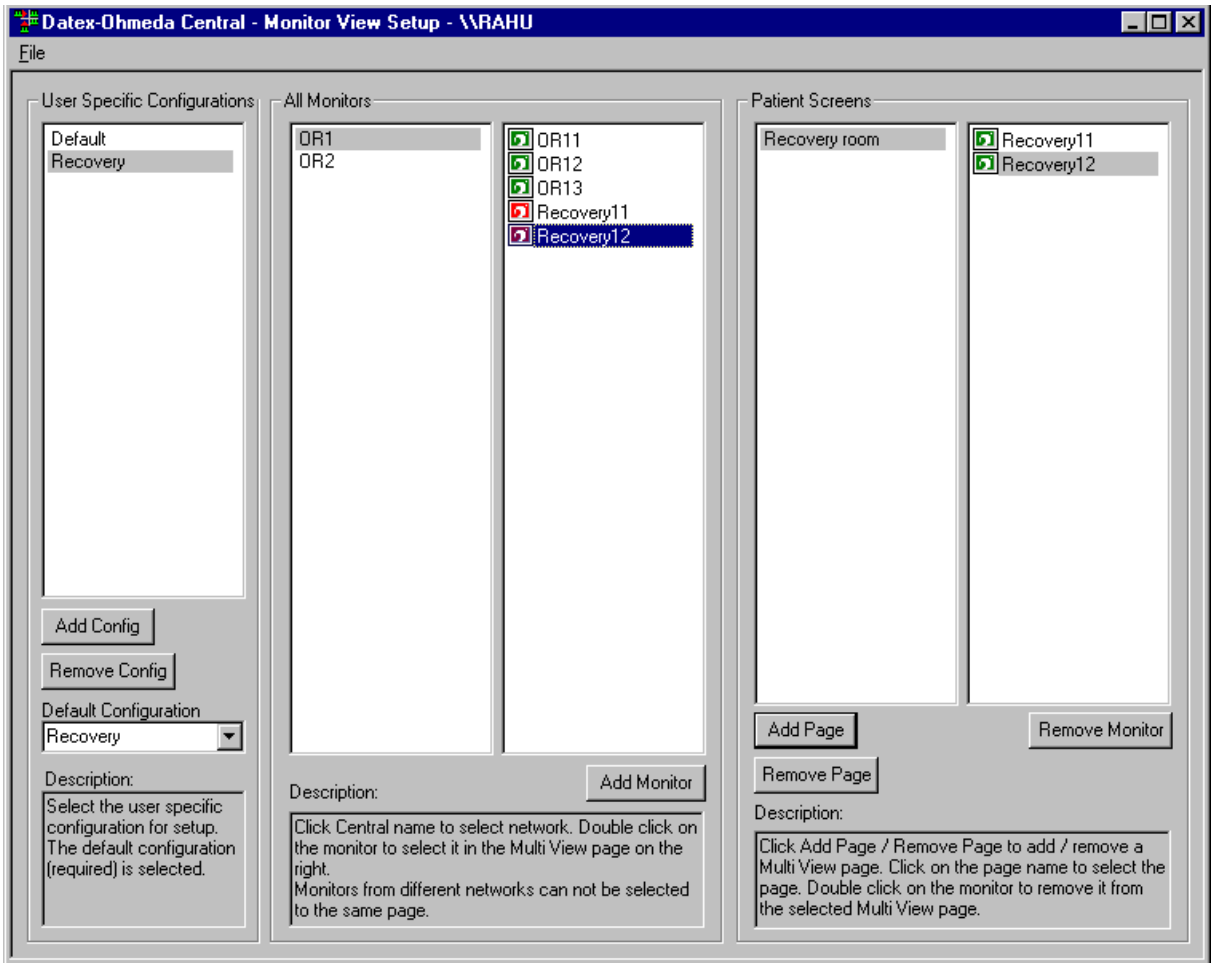


5.2.2 View setup

From a Central you can view only the monitors connected to the same 10 Mbps hub. From a ViewStation you can view any of the monitors in those networks connected together with it, see above. To enable viewing, configure the the monitor views with the ViewSetup software.

The ViewStation can have up to 20 user specific configurations, e.g. for different departments or patient groups. The maximum number of monitors in each configuration is 32, that are shown as up to 10 Multi View pages on Patient Screen. On Status Screen the pages are seen as a row of tabs. On one page you can only select monitors from the same monitor network. A Central can only have one configuration.

- Click ***Central Setup*** icon and select ***ViewSetup***.


Datex-Ohmeda Central - Monitor View Setup - \\RAHU
File
User Specific Configurations
Default
Recovery
Add Config
Remove Config
Default Configuration
Recovery
Description:
Select the user specific configuration for setup. The default configuration (required) is selected.
All Monitors
OR1
OR2
OR11
OR12
OR13
Recovery11
Recovery12
Description:
Add Monitor
Click Central name to select network. Double click on the monitor to select it in the Multi View page on the right.
Monitors from different networks can not be selected to the same page.
Patient Screens
Recovery room
Recovery11
Recovery12
Add Page
Remove Monitor
Remove Page
Description:
Click Add Page / Remove Page to add / remove a Multi View page. Click on the page name to select the page. Double click on the monitor to remove it from the selected Multi View page.

The system suggests the name 'Default' for the first configuration. You can edit the name and other items by double clicking the item.

1. Click ***Add Config*** to make a new configuration and name it.
2. Highlight the desired Central. The list of monitors connected to it appears.
3. Click ***Add Page*** and name it.
4. Highlight the page and click ***Add Monitor*** to add the desired monitor to the page. The monitor appears on the rightmost column, and its color in the middle column is changed to red. All monitors on a page must belong to the same monitor network.

To remove a monitor from the page:

1. Highlight the monitor in the rightmost column.
2. Click ***Remove monitor***.

To remove a configuration or page:

1. Highlight the configuration/page to be removed
2. Click the ***Remove Config./Page.***

Saving the View Setup

1. After configuring, click ***File - Save.*** Also print the setup by clicking ***Print*** to make a hard copy of the configuration for later troubleshooting etc. purpose.
2. Exit the View Setup program.

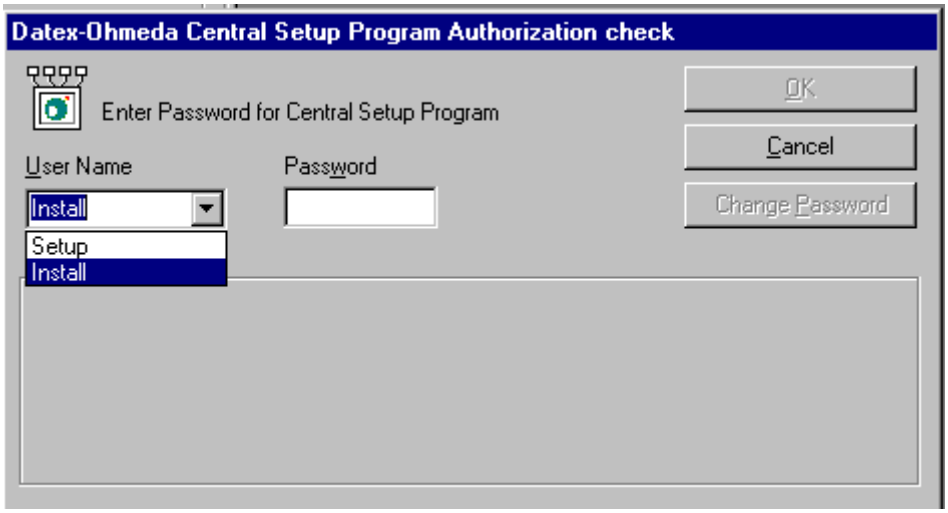
5.2.3 System setup

Passwords and user names

1. Click ***Central Setup*** icon and select ***SystemSetup***.
2. Give the user name and password.
   If you are installing the system, use 'Install' password with the default password 'CCCCC'. This password entitles to edit all the setup options. For the most frequently changed items, like Patient Screen or printer settings, use 'Setup' password, default is 'BBBBB'. It entitles you to enter any other option group except "System Setup".

To change the password:

- Click the ***Change Password*** button.

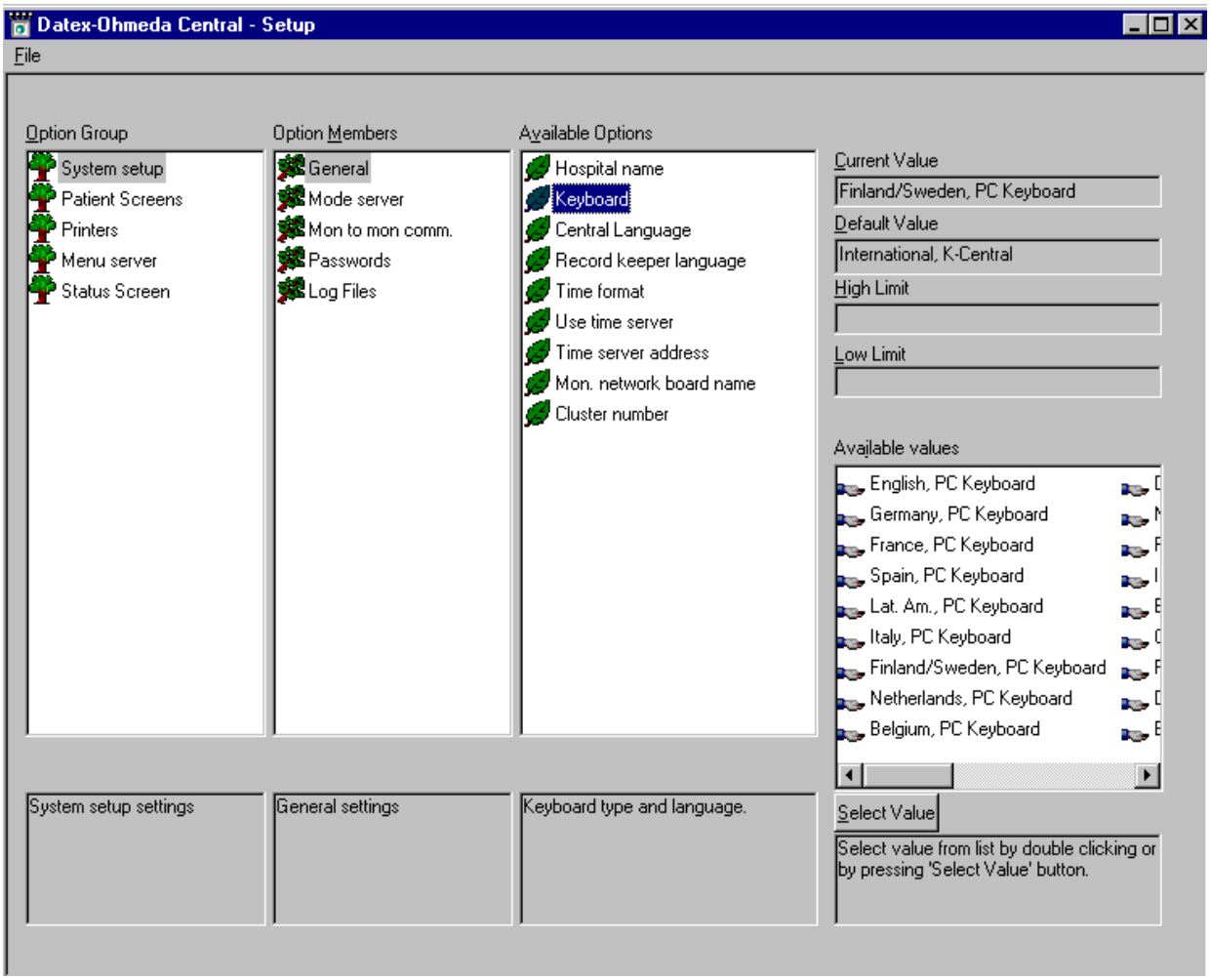


NOTE: In the following lists of configurable options, all items are available for a Central setup. For the Network Manager configuration, only the items marked with NM are available, and for ViewStation, only the items marked with VS.

If the Network Manager configuration is used. It must be set on when the network software is installed, see page 66.

System Setup

System Setup sholud be used only when installing the system and requires the Install password.



General

NM	Hospital name	• Give the hospital name. The name appears in the printed anesthesia records.
NM, VS	Keyboard	• Select the keyboard type and layout. The default value is ‘K-CENTRALB, International’.
NM, VS	Central language	• Select the system language. The default value is ‘English’.
NM	Record keeper language	• For managing Record Keeper language, see ARK Configuration Software documents. The default value is ‘1’.
NM, VS	Time format	• Select the time format. The default value is 24 hours.
NM, VS	Use time server	• Select if the time server is used. The default value is ‘NO’.

Using the time server sets the same time for all the Centrals in Datex-Ohmeda Network (TCP/IP), and thus, for all the monitors in the entire network. If the network is connected to a Datex-Ohmeda IM server, use it as a time server. If no other IM server is available, use the primary Central as a time server.

NM, VS	Time server address	• Name the server which works as a time server. This selection can be changed through 'Components' service page on the run.
NM	Mon. network board name	• If the network board is changed e.g. because of the failure, run the DOCCheckUp to find out the network board name, and select the name for the board no 1 (monitor network). Default value is \Device\EI90x2. For the use of DOCCheckUp, see chapter 9.2
NM	Cluster number	• Give identification number (1-8) for each Central for patient data addressing. This address is required when patient trend data is passed between the Centrals. See *'Menu server - Other options - External Central'* settings later in this chapter, see page 55. Default value is 1.

Mode server No options available.

Monitor-to-monitor communication

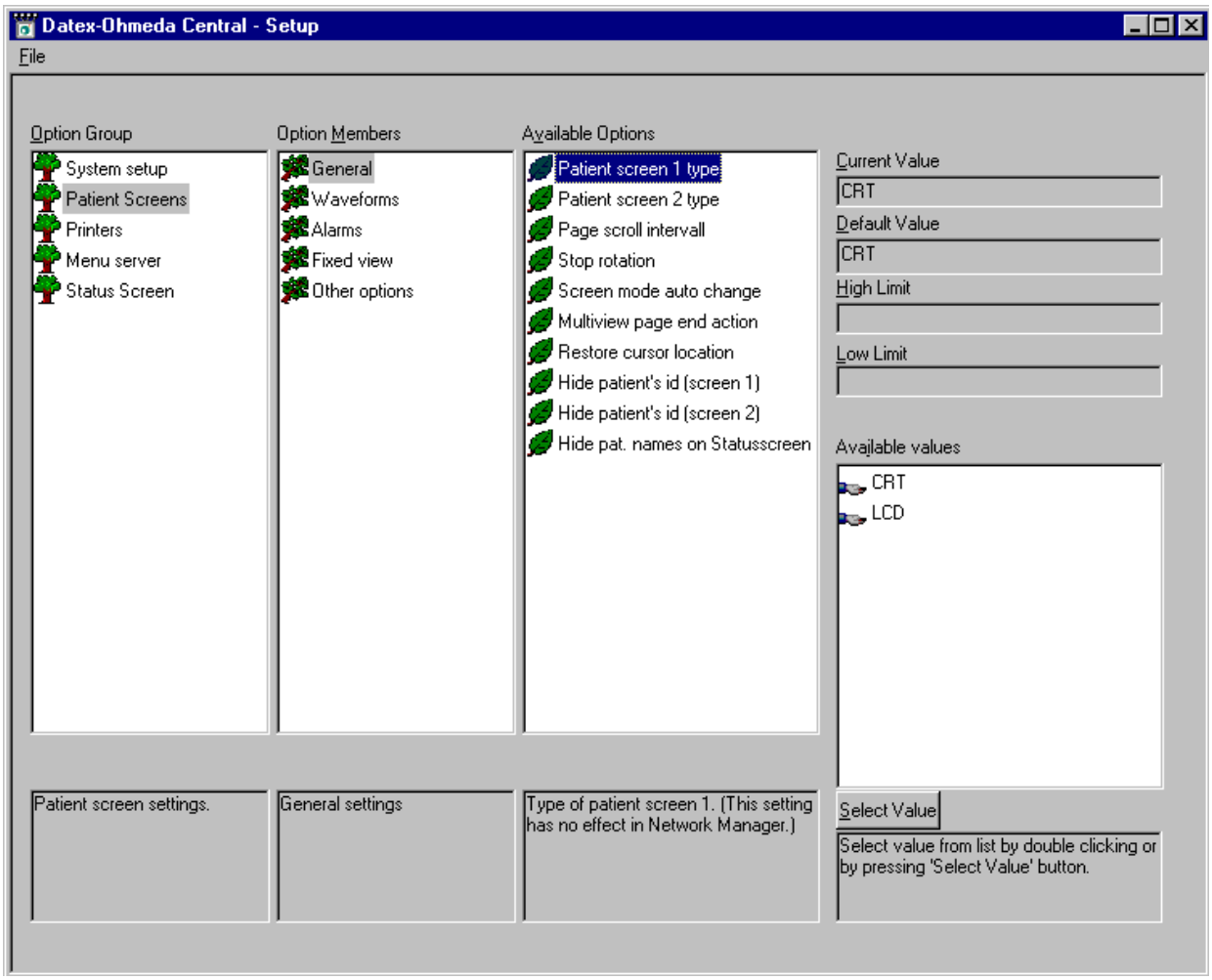
- Enable or disable monitor-to-monitor communication. Default value is 'Yes'.

Passwords

NM, VS	Exit password	• Give the password required to close down the network. The default password is 'AAAAA'.
NM, VS	Setup password	• Give the password required to enter the System Setup ***Installation*** menu on Central's /ViewStation (Patient Screen). The default password is 'BBBBB'.
NM, VS	Service password	• Give the password required to enter the service pages (Status Screen) and System Setup ***Service*** menu (Patient Screen). The default password is 'CCCCC'.

Log Files Files are discussed in Part II, in the Software introduction.

Patient Screens



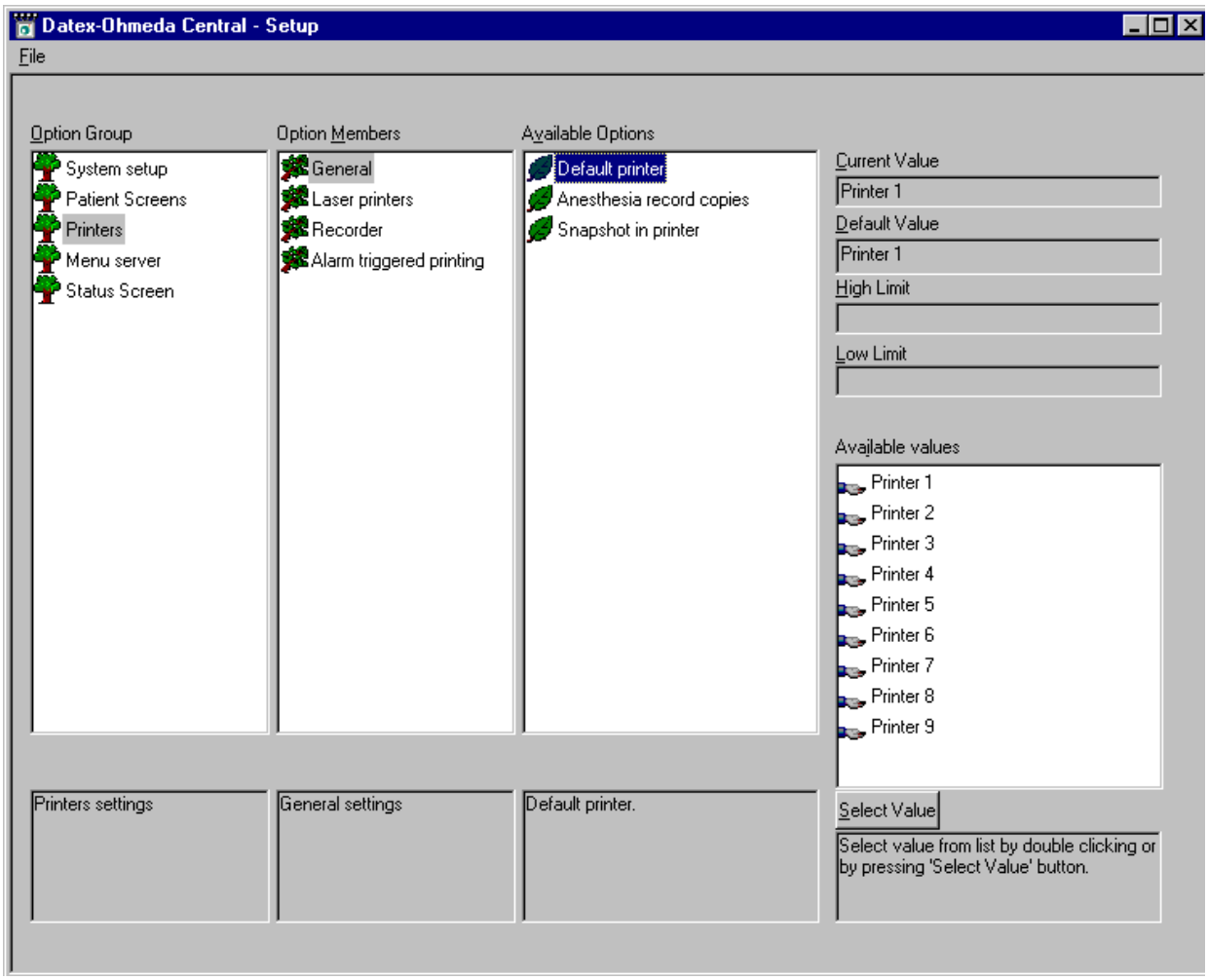
General

VS	Patient screen 1, 2 type	• Select the Patient Screen type, 'CRT' for the display D-VIC17, or 'LCD' for D-CFLT15. The default value is 'CRT'. Requires the Install password.
VS	Page scroll interval	• Select the interval for the automatic page scroll. The default value is 10 s.
VS	Stop rotation	• Select 'Yes' (default) to stop the automatic page scroll, when the screen is selected.
VS	Screen mode auto change	• When there are two Patient Screens in the system: Select whether the inactive (non-focused) Patient Screen will display the maximum number of monitors (Multi View) when the Patient View is selected on the active (focused) screen. The default value is 'Yes'.
VS	Multi View page end action	• Select the cursor action when the last patient of a Multi View page is reached by turning the ComWheel (Stop/Change Page/Change Screen/Go Around) The default value is 'Change page'.
VS	Restore cursor location	• Select 'Yes' (default) to return the cursor to the same place when the screen is selected again. Requires the Install password.

VS	Hide patient's id (screen 1, screen 2)	• Select whether patient name and ID are hidden on the Patient Screen or not. The default value is 'No'.
NM	Hide patient names on Status Screen	• Select whether patient name and ID are hidden on the Status Screen or not. The default value is 'No'.
Waveforms		
VS	ECG grid	• Select whether a grid is used for the ECG curve in the Multi View. The distance between grid points corresponds to approximately 400 ms for ECG Speed selection 'Low', 200 ms for ECG Speed selection 'Medium' and 100 ms for ECG Speed selection 'High'. The default value is 'No'.
VS	ECG speed, Patient view /8 patient mode / 16 patient mode	• Set the ECG sweep speed for Patient View, 8 and 16 patient modes. The default value is 'Medium'.
VS	Expiratory flow displayed positive	• Select 'Yes' (default) to display the expiratory flow positive in the spirometry.
VS	Overlapping pressures	• Select if the pressure waveforms are combined, i.e., displayed overlapping each other, or not. The default value is 'No'.
Alarms		•
NM, VS	Displayed alarms	• Select which type of alarms are displayed on the Multi View and the Status Screen. The default value is 'Yellow and red alarms'.
VS	Alarm sounds enabled	• Select if the alarm sound is enabled. The default value is 'YES'. Requires the Install password.
VS	ISO alarm sounds	• Select if the alarm sounds are according to ISO standard (Yes) or Datex-Ohmeda specific (No). The default value is 'YES'. Requires the Install password.
VS	Audible alarms always on	• Default value 'YES' means that the alarms are enabled in Central even when the audio alarms have been turned off in the monitor. Exception: Silencing/suspending alarms for 2 minutes at the monitor, silences also the alarms at the Central. 'NO' means that Central's audible alarms follow the settings made at the monitor. Requires the Install password.
VS	Silencing individual monitors	• Select 'YES' to enable silencing desired monitor locations' alarms permanently on the Central/ViewStation. 'NO' disables this selection. NOTE: Affects only Central's alarms, not the monitor's. Requires the Install password.
Fixed View		No options available
Other options		No options available

Printers

Read also chapter 1.



General

VS	Default printer	• Select the default printer, the default value is 'Printer 1'.
VS	Anesthesia record copies	• Select how many copies of anesthesia record are printed. Default value is 1.
VS	Snapshot in printer	• Print snapshot in printer if the recorder is not responding. Default value is 'No'. Requires the Install password.

Laser printers

VS	Printer 1 (2 etc) name	• Give a descriptive name for the printer you are using. The name appears on the monitor when printing.
VS	Printer 1 (2 etc) port	• Select the printer the operating system is using.

Recorder

VS, NM	Recorder type	• Select 4 inch recorder. (The 2-inch alternative is for later use.) NOTE: Select 'No recorder' when laser printer is used.
VS, NM	2-inch recorder port	• Select the recorder port for a 2-inch recorder. Requires the Install password.
VS, NM	Recorder speed*	• Select the speed of 1, 6.25, 12.5, 25 and 50 mm/sec, the default is 'Auto scale'.
VS, NM	Record time before manual	• Define how long a time before a key press is printed when the **Recorder Start/Stop** button is pressed.
VS, NM	Manual record length*	• Set the total length of the manually started strip chart. The default value is 30 seconds.
NM	Recorder ECG/BP/Pleth scale	• Define the waveform scales. The default value is 'Auto scaling'
NM	Recorder trace 1-4	• Define the waveforms recorded. Trace 1: the default value is ECG + heart rate Trace 2: the default value is Invasive blood pressure 1 Trace 3: the default value is Invasive blood pressure 2 Trace 4: the default value is Plethysmograph

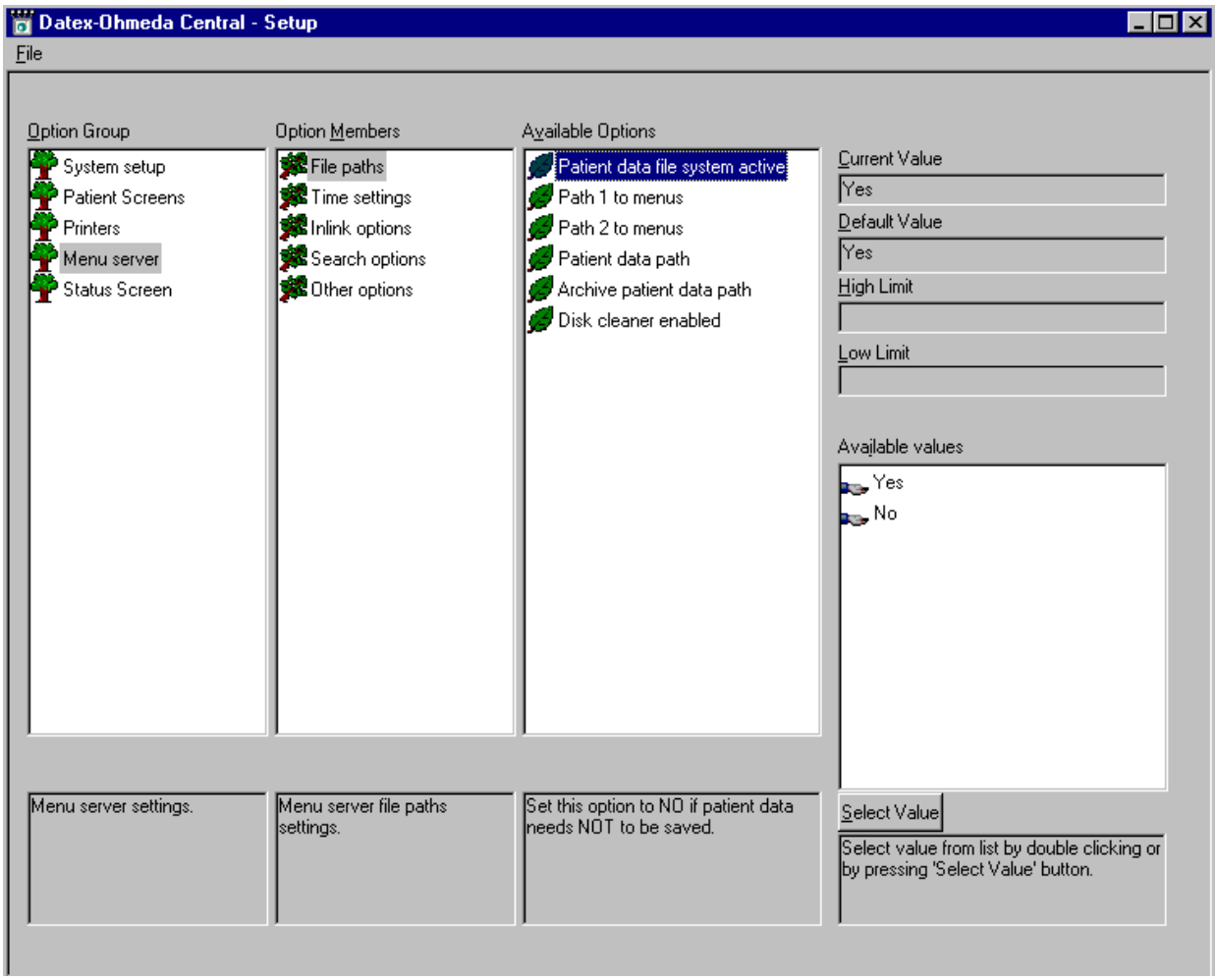
Alarm triggered printing

NM	Autotrigger on*	• Select 'Yes' to start a printer or recorder automatically when a serious alarm occurs.
NM	Record time before alarm	• Define how long a time before the alarm will be included in printing.
NM	Alarm triggered record length*	• Set the total length of the alarm triggered strip chart. The default value is 20 seconds.

Items marked with an asterisk * can also be adjusted in the ***System - Installation - Recorder setup*** menu of the Central's Patient Screen. The settings made through menu are not permanent but valid only until the system is restarted. See Part II for further information.

Menu server

Menu server is used with Centrals and Network Managers only, not ViewStations.



File paths

NM — Patient data file system active

- Select if the patient data is stored or not. The default value is 'Yes'.

NM — Path 1 to menus
Path 2 to menus

- Name the folder which contains the record keeping menu files.

The directory indicated by 'Path 1 to menus' contains the original record keeping menu files created by the ARK Configuration software. These files are automatically copied to the directory indicated by 'Path 2 to Menus' when the network software is started. 'Path 1 to menus' and 'Path 2 to menus' should be the same, the default being D:\CENTRAL\MENUS, unless the Central is are connected to (TCP/IP) network.

NM — Patient data path

- Name the directory which contains the patient data and preoperative data files. The default value is D:\CENTRAL\PATDATA.

NOTE: You can select from the existing directories only, or use the default path. The default path is created automatically when the network software is started for the first time after setup.

NM	Archive patient data path	• Give the directory where the patient data is archived. The default is D:\CENTRAL\PATDATA\ARC
NM	Disk cleaner enabled	• Select if the automatic disk cleaner is enabled according to the 'Patient data storage time' and 'Preop data storage time'. The default value is 'Yes' Disable the disk cleaner only if the Database Outlink software is run regularly to archive the patient data files. Requires the Install password.

Time settings

NM	Preop data storage time (days)	• Give the storage time for the preoperative data files (1-8 days). Default value is five days. After this time the files are erased by the built-in disk cleaner. NOTE: The preoperative cases do not have any measured parameters or timed events. The preoperative case can be created by entering only untimed events through Record Keeper Keyboard or by feeding in a preop case from the hospital information system. Preoperative cases can be loaded to the monitor from the 'Preop Data / net' -menu created using the ARK Configuration Software. The menu number is 165.
NM	Postop data storage time (days)	• Give the storage time for the postoperative data files (1-8 days). Default value is five days. After this time the files are erased by the built-in disk cleaner.
NM	Patient data storage time (days)	• Give the storage time for the patient data files (2-90 days). As the time expires the files will be deleted automatically. The default value is 7 days, and it is recommended not to be more than 14 days. After this time the files are erased by the disk cleaner.
NM	Lab data storage time (days)	• Give the storage time for the laboratory result files (1-8 days). Default value is five days. After this time the files are erased by the built-in disk cleaner.
NM	Preop list time range (hours)	• Give the access time (1-96 hours) for the preoperative data files (containing patient name, id, demographics, etc.). The default value is 48 hours.
NM	Patient list time range (hours)	• Give the access time for the patient data files (1-24 hours). The default value is 24 hours.
NM	Lab list time range (hours)	• Give the access time (1-96 hours) for the laboratory result files. The default value is 12 hours.
NM	User ID timespan	• Set the length of time (1-30000 seconds) when the ARK user id is valid after last documentation. Default is 300s. Requires the Install password.

Inlink options

These options are for Datex-Ohmeda Inlink users', refer also to documentation delivered with it. Requires the Install password.

NM	Inlink incoming message path	For Inlink users only, refer to its documentation. Requires the Install password.
NM	Path to case list	For Inlink users only, refer to its documentation. Requires the Install password.
NM	Outmsg path (1-9) for exported data	For Inlink users only, refer to its documentation. Requires the Install password.

NM	Event codes (1-9) for exported data	For Inlink users only, refer to its documentation. Requires the Install password.

Search options

Anesthesia Record Keeping related search options, refer to the record keeping documentation and Datex-Ohmeda S/5 Anesthesia Pathway Builder User's Reference Manual. Requires the Install password.

Other options

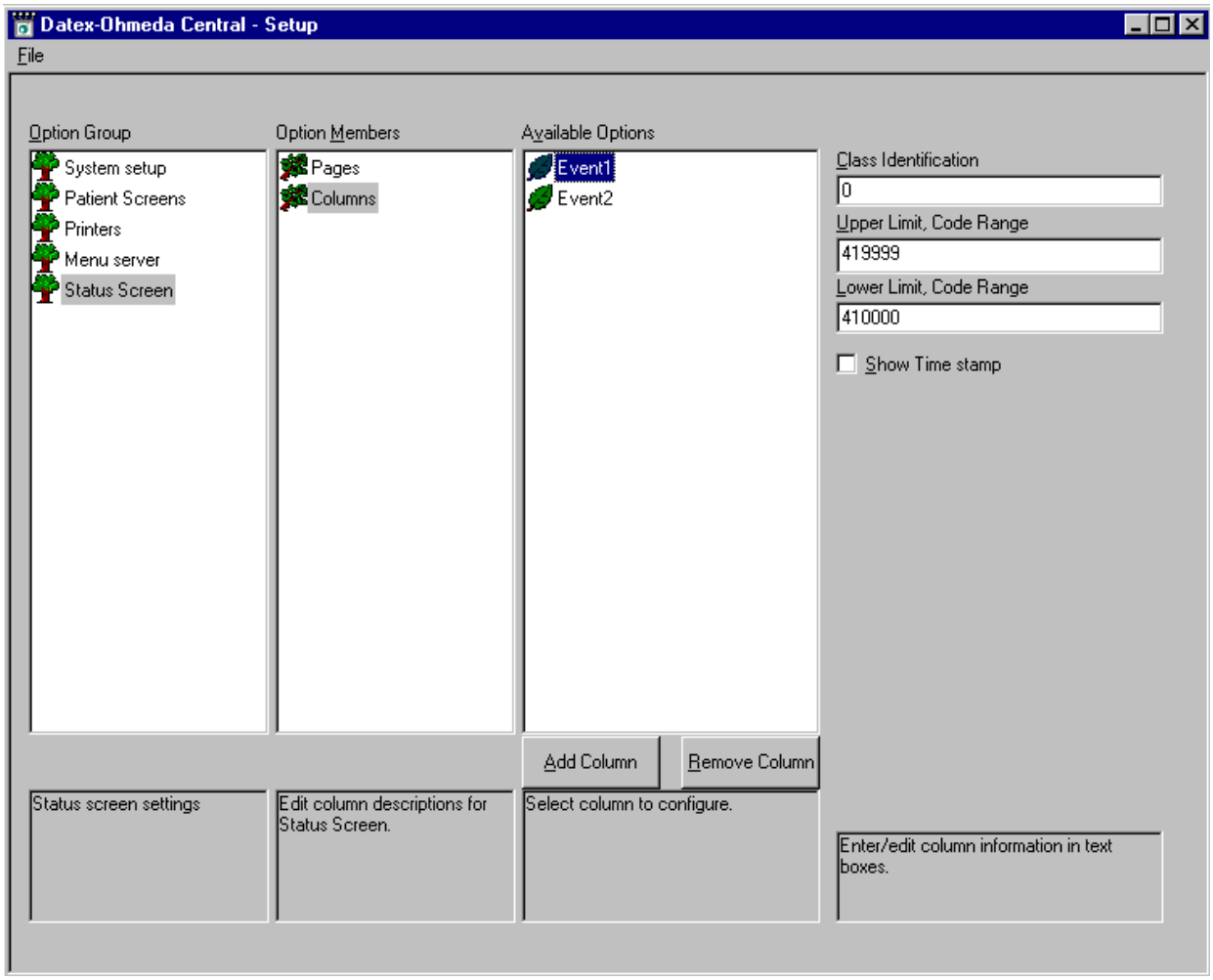
NM	Preop data sort criteria	• Select the order (time or alphabetical) of the menu lines in the 'Preop Data / net' menu (165). The default value is 'Alphabetical order'.
NM	Patient data sort criteria	• Select the order (time or alphabetical) of the menu lines in the 'Patient from Net' menu. The default value is 'Time order'. NOTE: This selection is available only when S-ARKXX or S-ICUXX softwares are used.
NM	Lab data sort criteria	• Select the order (menu or alphabetical) of lab data displayed. The default value is 'Alphabetical order'.
NM	Check patient name before load	• Select whether patient data identification information (patient name and ID) is checked before loading patient data from Central to monitor. Default value is 'Yes'. If the value of this option is set to 'Yes', and the identification of loaded patient data does not match to the identification defined at the monitor, a message 'Loading Failed. Wrong patient.' is displayed in the message field of the monitor.
NM	External Central 1, 2, 3	• Give the cluster number and path to the patient data files to enable patient data transfer between Centrals. Requires the Install password.
NM	External load action	• Select whether to make a back-up or not when patient data files are loaded from another monitor network. Default is 'Make back-up'.
NM	Enhanced patient lists on	For Inlink users only, refer to its documentation. Requires the Install password.
NM	Data origin filter	For Inlink users only, refer to its documentation. Requires the Install password.
NM	Data type filter	For Inlink users only, refer to its documentation. Requires the Install password.
NM	Data time range filter	For Inlink users only, refer to its documentation. Requires the Install password.

Configuring the Status Screen

The Status Screen uses the same configurations and pages as Patient Screen, which are defined in ViewSetup. In addition, there is also a page called 'All', where all the monitor locations are displayed independently from the pages they are configured on.

Additionally, you can define pages for information that is displayed on the Status Screen only, like event data from the record keeping (e.g. personnel, medication etc.). There can be up to 10 different pages, each containing up to three columns, see below.

Pages under Service tab cannot be configured. The service pages are introduced in the Part II of this manual.



Pages

Define the name and up to three columns to be shown on the page:

1. Select ***Status Screen - Pages*** and click ***Add page***.
2. Select the columns to be displayed on the page by double clicking the desired column in the 'Available Columns' box.

To remove a column from a page:

- Double click the column in the 'Current Columns' box

Columns

If there is not a suitable column in the list of available ones, you can make one of your own:

- Select ***Status Screen*** - Columns and click ***Add column***.
- Name the column according to your purpose.
- Give class information, or upper and lower limit of the code range according to the codes of the Record Keeper, so that information find its way to the desired column. For further information on the code ranges, refer to the Datex-Ohmeda Record Keeping documentation or technical support.
- Tick 'Show Time Stamp' if you want to display the time of the event.

6 CONNECTING NETWORKS

1. All Centrals and ViewStations to be connected must have a different PC name.
   All Centrals are shipped as Central_1, and one Central, with the status of primary Central, should use that name. Other Centrals can be renamed under Windows NT Control Panel - Network - Identification: click ***Change*** button. See page 64.
2. Enable time services, and use a Datex-Ohmeda IM server, or the primary Central, as a time server, see page 47.
3. Make sure you have copied a similar `NETWORK.AIC` to all Centrals and ViewStations, and made appropriate configurations for each of them. Especially make sure you have defined which Centrals and ViewStations are connected together, see Select connections, page 43.
4. Make sure you have defined individual cluster numbers for each Central in System setup - General, see page 48, and given these cluster numbers and patient data addresses in the in System setup - Menu server - Other options, see page 55.
5. Make sure that you have enabled monitor-to-monitor communication, in System Setup - General, see page 48.

7 INSTALLING A RECORDER OR PRINTER

You can connect either a laser printer or a strip-chart recorder to a Central or ViewStation. Printers and recorders are configured as part of the system setup, as shown on the page 51.

7.1 Installing a recorder

1. Connect the recorder cable to the parallel connector on the rear panel of Network Computer, see Figure 4-2, and to the connector on the recorder's rear panel.
2. Connect the recorder's power cable to the power inlet and to the wall socket.

7.2 Installing a printer

You can install a printer:

– locally to a Central/ViewStation/Network Manager

– locally to a Central/ViewStation/Network Manager but shared for other Centrals/ViewStations/Network Manager as well

– directly to the network hub (100 Mbps), thus shared for Centrals, Network Managers and ViewStations in the network

NOTE: If the Central or ViewStation, which the printer is connected to, is turned off or goes down, the printer is not available for other Centrals/ViewStations.

Following installation instructions are introductory only. Follow the instructions provided by the manufacturer of the operating system, printer and network board.

After installation, configure the printer to work with the Datex-Ohmeda Central or Network with the Central's.

Installing a local printer

1. Connect the printer cable to the connector on the rear panel of Network Computer, and to the connector on the printer's rear panel. Secure the connections with finger screws.
2. Connect the printer's power cable to the power inlet and to the wall socket.

Adding a local printer to the operating system

1. Turn on the printer and computer, start the Windows NT and log on as a central administrator.
2. Click ***Start*** in the lower left corner of the screen and select ***Settings - Printers - Add Printer***. The operating system starts a program to configure the printer connection.
3. Select ***My computer***. After each step move forward by clicking ***Next***.
4. Select the printer port where you attached the printer cable (typically LPT1).
5. Select the manufacturer and model from the list. If your printer is not on the list, click ***Have disk*** button and insert the installation disk which came along with the printer.
6. Select the driver with PCL language.

7. Select whether the printer will be local or shared with other Centrals in the network. If it will be shared, give it a share name, e.g. CENTRAL_1 Printer. Use the same name throughout the configuration.
8. Print a test page.

After successful installation the printer icon with the printer name appears into ***Printers*** folder.

Installing a network printer

If the printer is going to be shared by several Centrals and/or ViewStations, it is recommended to connect the printer to the hub. This installation requires that the printer is equipped with a network board. The printers purchased from Datex-Ohmeda have the network board installed. If you use a locally purchased printer, install the network board (HP JetDirect) according to the instructions provided by the printer manufacturer.

Preparations

1. Connect the printer cable to the 100 Mbps TCP/IP network hub, and to the connector on the printer's rear panel.
2. Connect the printer's power cable to the power inlet and to the wall socket.
3. Print the JetDirect configuration page from the printer's menu, and notice the printer's hardware address, you'll need it later on.
4. Use preferably default Datex-Ohmeda IP addresses. IP addresses can be configured manually, refer to printer's manual.

The Datex-Ohmeda default IP addresses are:

PRINTER_1	192.168.1.50
PRINTER_2	192.168.1.51
PRINTER_2	192.168.1.52

Adding a network printer to the operating system

1. Insert the HP JetDirect CD ROM to the CD ROM drive.
2. Click the 'Install Network Printer' icon. The installation program starts.
3. Select 'Specify a printer by address'.
4. Enter the hardware address you got during preparations.
5. Set mode to TCP/IP.
6. To select the driver click 'Have Disk' button and insert the disk provided by the printer manufacturer.
7. Give the printer name.
8. Select that the printer is used shared and give the share name (by default the same as above).
9. Print a test page.

After the successful installation the printer icon appears to the Printers folder.

Configuring the printer

1. Click ***Central Setup*** icon and select ***SystemSetup***.
2. (If you are configuring a locally connected printer and you have had a recorder installed earlier to this Central, go to System setup and ***Printers- Recorder - Recorder type*** and select ***No recorder***, page 48)
3. Select ***Printers - Laser Printers - Printer 1, 2, etc. port***.
4. Click the little square beside the ***Current Value*** box and select the printer.
5. Select the size and orientation of the paper, and the paper source, and save with 'OK'.
6. Go to ***Printers - Laser Printers - Printer 1, 2,... name***, and give a descriptive name. This name is seen on the bedside monitors.
7. Click ***File*** and select ***Save***, and exit the Setup program.

8 SOFTWARE INSTALLATION

The operating system, the network software, and the setup software are installed by the manufacturer. Re-installation may be required, e.g. after changing the hard disk of the Network Computer.

Before installation, make sure you have all the necessary drivers available:

- network board driver
- audio driver
- display controller board driver
- printer driver, if a printer is installed

8.1 Operating system

All the Network Computers shipped from the manufacturer are equipped with Windows NT™ operating system with Service pack 6, or newer. If the hard disk of the computer is changed the operating system has to be reinstalled.

User names and passwords

To enter the operating system requires a password which depends on what kind of rights each user needs to have. The default passwords are

User	User id	Password
administrator, e.g. IT department of the hospital	administrator	admin
central administrator, person(s) responsible for Central configuration and installation, e.g. IT person of a department	central admin	centraladmin
user, e.g. doctors and nurses using the Central in daily routines	central user	centraluser

Make sure that the administrator and central administrator passwords are changed frequently to prevent misuse. Do not change the central user password, because this password is required for starting the Central software.

You must log on as an administrator or central administrator to change settings under operating system. Remember to change the user again to central user after the configuration is done.

To log on as a different user press and hold the shift key while the operating system starts up.

8.1.2 Installing the operating system

Following installation instructions are introductory only. Follow the instructions provided by the operating system manufacturer.

1. Place the Windows NT™ 4.0 workstation CD-ROM into the CD-ROM drive and turn the computer on.
2. If you have some version of NT already installed, choose to install a fresh copy.
3. Check that setup program finds the right hardware and software components, e.g.:

```
       Computer: Standard PC
        Display: Auto Detect
       Keyboard: XT, AT, or Enhanced Keyboard (83-104)
Keyboard Layout: US
         Device: Logitech Mouse Port Mouse
     No Changes: The above list matches my computer.
```

3. Make sure that your disk will be divided into three parts C:, D: and E: in the following way:

```
C: 500Mb FAT
D: 2Gb NTFS
E: rest NTFS
```

4. Install the Windows NT on the E:\WINNT
5. Remove any floppy or CD disks from the drives and restart the computer.

Windows NT setup

1. Insert the Windows NT Workstation CD-ROM into CD-ROM drive when prompted, and perform the rest of the setup.
2. In 'Setup Options' select ***Custom Setup***.
3. Fill in the prompted information: name, organization and product ID-number from the 'Certificate of the Authenticity'.
4. Name the computer, use one of the following:
   Central_1
   Central_2
   Central_3
   Central_4
   ViewStation_1
   ViewStation_2
   ViewStation_3
   ViewStation_4
5. Change the central administrator password, max 14 characters. The factory installed password is "centraladmin".
   NOTE: The administrator account allows maximum access to your computer's recourses. Therefore the administrator password is an important piece of information and should be stored in a safe place.
6. Under 'Select Components', select the Notepad under 'Accessories' deselect all the other components to prevent misuse.
7. During Networking installation, select the options 'This computer will participate on a network' and 'Wired to the network'.

8. Select the network adapter, and install the corresponding driver from the disk.
9. Select 'TCP/IP protocol' for the network TCP/IP protocols.
10. Select default services in the 'Network Services'.
11. Give the prompted IP addresses, the default ones are:

Central_1	192.168.1.30
Central_2	192.168.1.31
Central_3	192.168.1.32
Central_4	192.168.1.33
ViewStation_1	192.168.1.40
ViewStation_2	192.168.1.41
ViewStation_3	192.168.1.42
ViewStation_4	192.168.1.43

12. Define the workgroup for the workstation as 'DONET'.
13. Finish setup.

Now the Windows NT is installed and configured. Check the final tunings:

1. Set Date/Time Properties according to your location and check that time and date are right.
2. Change in 'Display Properties' the desktop area to 1024 by 768 pixels; large fonts.
3. Prepare the Emergency repair disk.
4. Remove all disks from the drives and restart the computer with the administrator password which you just gave.

8.1.3 Installing NT Service Pack

1. Insert the Microsoft Windows NT Service Pack 6 CD ROM into the CD ROM drive of the Network Computer.
2. Accept the License Agreement, but do not backup files to uninstall new Service Pack.
3. Click ***Install***.
4. Restart the computer.

8.1.4 Installing driver for the network board

Installing the above mentioned programs install also the network board for Datex-Ohmeda Network. To install the network board for monitor network do the following.

1. In the operating system select ***Start - Settings - Control Panel - Network - Adapters***.
2. Click ***Add*** and ***Have Disk***.
3. Insert the driver disk which
4. Select ***Intel(R) PRO Adapter*** and click ***OK***.
5. In the ***Network*** folder select ***Bindings***.
6. Select ***Show bindings for all adapters***.
7. Click ***Disable*** and ***Close***.
8. Restart the computer.

8.1.5 Installing driver for display controller board

Run SETUP.EXE file to install the driver for the display controller board.

8.1.6 Configuring users

1. In the operating system select ***Start - Programs - Administrative Tools -User Manager***.
2. Define the following group memberships

User Account:	Group Membership	Default Password
Central Admin	Administrators	centraladmin
Central User	Users	centraluser

8.2 Installing the network software

The network software, S-CNETXX and S-VNETXX is pre-installed by the manufacturer. To reinstall:

1. Close all other applications.
2. Log in as a central administrator.
3. Make backup copies of the files networc.aic, monviews.aic and setup.aic to a diskette.
4. Insert the Network Setup disk in the disk drive.
5. Use NT Explorer, or select ***Start*** and ***Run***, and start SETUP.EXE. The 'Welcome!' display should appear.
6. Follow instructions displayed. The button 'Next' means approval, 'Back' takes you to the former view, and 'Cancel' interrupts the installation.

If the network software is already installed

- If a former version of the software is found, select 'Next' to reinstall the software, or cancel the installation. Follow the instructions displayed.
  If the software is installed in the computer the former version exists, the old files are moved in a subfolder 'Old Central Setup'.

Central or Network Manger?

- Select according to your system between a complete Central with Patient Screen(s) and Network Manager configuration.

Final check

1. Click the box that enables reading the Readme file and read the latest release notes.
2. Restart the Central and log in as a central user.

9 FUNCTIONAL CHECK

9.1 Checking the equipment and connections

Turn on the power to the computer. Confirm that all networked monitors register to the network.

9.1.1 Checking the Patient Screen

1. Confirm that the Multi View is activated.
2. Press the **Setup** key. Confirm that the setup menu appears.
3. Rotate the ComWheel. Confirm that the highlight moves within the menu.
4. Press the **Normal Screen** key. Confirm that the menu disappears.
5. Rotate the ComWheel. Confirm that the cursor moves respectively on the display.
6. Push the ComWheel. Confirm that the Patient View is activated.
7. Press the **Multi View** key. Confirm that the Multi View is activated.

9.1.2 Checking the Status Screen

1. Confirm that the user pages are activated.
2. Click the tabs with the mouse. Confirm that the pages are changed.
3. Click the system menu in the upper left corner of the screen. Confirm that the menu appears.

9.1.3 Checking the monitor-to-monitor communication

1. Make sure the monitors are connected to the wall boxes and turned on.
2. Press **Patient Data** on a monitor's command board, and select Other Patients.
3. Confirm that you receive information from the other monitor you chose, both the Patient view and alarms.

9.1.4 Checking the communication between the monitor networks

- Repeat the procedure above but make sure that the monitors are in different monitor networks.

9.1.5 Checking the printer

1. Press **Patient Data**.
2. Select the information you want to print and press ComWheel.
3. Make sure that the desired printing appears to the desired printer.
4. Make sure that Headings of the printings are right.

9.1.6 Checking the recorder

1. Press **Recorder Start/Stop** to start a manual strip.
2. Confirm that the recorder prints the desired waveforms and headings.

9.2 Checking the configuration

1. Start the DOCCheckUp program by clicking it in the `D:\CENTRAL\PROGRAMS` folder.
2. See the `CENTRAL.LOG` file created by it, and check that there are no fatal error messages. See Appendix for an example of a log printout.

DOCCheckUp Introduction

Datex-Ohmeda Central CheckUp Utility (DOCCheckUp) is a utility that helps system administrators to find and fix errors during DOC system installation and configuration changes.

The DOCCheckUp could be used every time before system startup or only after system installation and configuration changes.

Tasks performed by DOCCheckUp:

1. Check platform
2. Check computer name
3. Check device drivers
4. Check current account
5. Check network boards
6. Check status of TCP/IP and Windows Socket (WinSock) 2.0
7. Check directory structures
8. Check central system configuration (`CENTRAL.AIC`)
9. Check startup configuration (`STARTUP.AIC`). Sets ARP table entries static.
10. Check Datex-Ohmeda networks configuration (`NETWORK.AIC`)
11. Check view configurations (`MONVIEWS.AIC`)
12. Check general configurations (`SETUP.AIC`)
13. Check system licenses

In the Appendix E, there is an example of the Central.log created by the DOCCheckup.

Task Descriptions

Check Platform:

Requirements:

– Windows NT WorkStation/Server 4.0

– Service Pack 6 or higher

Error message	**Reason**
“GetVersionEx(): ... “	probably earlier version of Windows NT (3.5)
“Unsupported: Microsoft Windows 3.1”	Windows 3.1 is not supported
“Unsupported: Microsoft Windows 95”	Windows 95 is not supported
“Unsupported: Microsoft Windows 98”	Windows 98 is not supported
“Unknown version of Microsoft Windows”	Can not find Windows version
“Unsupported: Microsoft Windows NT ... ”	Probably not proper Service Pack.
Success	**Meaning**
“Microsoft Windows NT Service Pack 6 ”	Windows NT 4.0 with Service Pack 6

Check computer name:

– Computer name defined in Control Panel -> Network -> Identification -> Computer Name

Error message	**Reason**
“GetComputerName(): ... “	probably earlier version of Windows NT (3.5)
Success	**Meaning**
“Computer Name: ... ”	– Computer name is defined. – This value will be used as a local Datex-Ohmeda network name. – A later check of Control Panel -> Network -> Protocols -> TCP/IP Protocol -> Properties -> DNS -> HostName should give the same value.

Check current account

– The current account that is used for start the DOC system has to have administrator privileges

Error message	**Reason**
“GetUserName(): ... “	probably earlier version of Windows NT (3.1)
“Account ... does not have sufficient privileges.”	Current account does not have administrator privileges, that means that later on the system startup will failed.
Success	**Meaning**
List of required privileges: - “Bypass traverse checking” - “Shut down the system” - “Act as a part of the opeating system” - “Increase quotas” - “Replace a process levell token” - “Change the system time“ - “Load and unload device drivers“	- All the listed privileges are needed.

Check network boards

Requirements:

- Two (2) network adapters have to be installed in Control Panel -> Network -> Adapters
- They should be 3COM EtherLink XL network adapters. The one connected to Monitor Network (MON adapter) should not be bound to TCP/IP or WINS client protocols.
- TCP/IP protocol has to be installed.
- If DOC is placed on standalone computer, then Control Panel -> Network -> Protocols -> TCP/IP Protocol -> Properties -> DNS -> Domain is empty, Default Gateway, Primary WINS Server contains the local IP address, DNS for Windows Resolution is enabled and NetBios Interface Service should be installed.

Error message	**Reason**
"No network adapter present"	No network adapter has been installed, or the installed network adapters do not function.
"RegOpenKeyEx():"	No value found in Software\Microsoft\Windows NT\CurrentVersion\NetworkCards or System\CurrentControlSet\Services\Parameters\Tcpip registry keys.
Success	**Meaning**
Adapter ...:	Number of the adapter
Service Name: ...	Service name of the adapter
Symbolic Link:	Symbolic link of the adapter. If this adapter is used for AS/3 network, the same value should be defined in MONGATE_BOARD (SETUP.AIC).
Description:	Description of the adapter
Manufacturer:	Manufacturer of the adapter
Using for TCP/IP Networking	This adapter probably is used for TCP/IP networking
Can be used for monitor networking	This adapter probably can be used for AS/3 networking

Check status of TCP/IP and Windows Socket (WinSock) 2.0

Requirements:

– TCP/IP protocol has to be installed.

Error message	Typical reason
“WSAStartup(): ...“ “gethostname(): ...” “gethostbyname(): ...	Too many open files. Too many open sockets: Each implementation may have a maximum number of socket handles available, either globally, per process or per thread. Too many processes: A Windows Sockets implementation may have a limit on the number of applications that may use it simultaneously. WSAStartUp may fail with this error if the limit has been reached. Host not found: No such host is known. The name is not an official hostname or alias, or it cannot be found in the database(s) being queried. This error may also be returned for protocol and service queries, and means the specified name could not be found in the relevant database. Invalid service provider version number. A service provider returned a version number other than 2.0. Valid name, no data record of requested type The requested name is valid and was found in the database, but it does not have the correct associated data being resolved for. The usual example for this is a hostname -> address translation attempt (using gethostbyname which uses the DNS (Domain Name Server), and an MX record is returned but no A record - indicating the host itself exists, but is not directly reachable. This is a non-recoverable error This indicates some sort of non-recoverable error occurred during a database lookup. This may be because the database files (e.g. BSD-compatible HOSTS, SERVICES or PROTOCOLS files) could not be found, or a DNS request was returned by the server with a severe error. Unable to initialize a service provider. Either a service provider's DLL could not be loaded or the provider's function failed. Network subsystem is unavailable The Windows Sockets implementation cannot function at this time because the underlying system it uses to provide network services is currently unavailable. Check: – that the appropriate Windows Sockets DLL file is in the current path, – that they are not trying to use more than one Windows Sockets implementation simultaneously. If there is more than one WINSOCK DLL on your system, be sure the first one in the path is appropriate for the network subsystem currently loaded. – the Windows Sockets implementation documentation to be sure all necessary components are currently installed and configured correctly.

Error message	Typical reason
“WSAStartup(): ...“ “gethostname(): ...” “gethostbyname(): ... cont.	Non-authoritative host not found This is usually a temporary error during hostname resolution and means that the local server did not receive a response from an authoritative server. A retry at some time later may be successful.
Success	**Meaning**
“Initializing Winsock 2.0 ... -> OK”	- Winsock 2.0 initialization successful
“Hostname ... -> OK”	- Found HostName in Control Panel -> Network -> Protocols -> TCP/IP Protocol -> Properties -> DNS -> HostName and it is the same like Computer Name
“IP address ... -> OK”	- Successful retrieve IP address from HostName
“Stop WinSock 2.0 ... -> OK”	- Successful shutdown Windows Socket 2.0

Check directory structures:

The following directories should exist:

- D:\
- D:\CENTRAL\GSPUI
- D:\CENTRAL\GSPUI\GSP
- D:\CENTRAL\GSPUI\TEXTS
- D:\CENTRAL\MONITORGATE
- D:\CENTRAL\PRINTERSERVICES
- D:\CENTRAL\PROGRAM
- D:\CENTRAL\SETUP
- D:\CENTRAL\STATUSSCREEN
- D:\CENTRAL\TOOLS

Warning if the following directories do not exist

- D:\CENTRAL\B2BMANAGER
- D:\CENTRAL\MENUSERVER
- D:\CENTRAL\MODESERVER

Error message	Reason
“Warning ... not exist“	- The directory does not exist, but it is not critical error
“Error ... not exist“	- The directory does not exist and it is a critical error.
Success	**Meaning**
“... -> OK”	- Directory exists

Check Central configuration (CENTRAL.AIC)

Requirements: `CENTRAL.AIC` and `CENTRAL.OPT` must exist and be well configured.

Error message	Reason
"Loading \CENTRAL\PROGRAM\CENTRAL.OPT failed - line=...: .... " "Loading \CENTRAL\PROGRAM\CENTRAL.AIC failed - line=...: .... "	1. **File is used by other process** Probably the file is open and locked by other application 2. **File pointer was moved** The file was changed by other application during loading 3. **Confuse read and write functions** File content is changed by other application 4. **I/O error:** Error occurs with disk-,file access/read/write 5. **Missing the closing string mark:** The option value is defined between " " 6. **The comment character ([]) is missing** Characters [and] is used for comment, but must be used in pair. 7. **The read text is longer then 32 or 255** The text defined without specified length is longer than 32 or 255 (depends on option) 8. **Read an invalid char:** Invalid character found in the file. 9. **Missing keyword or value string:** Keyword should be defined, but not found in the file, or the value string is not defined at all. 10. **Missing '=' character:** Character = is used for assignment, but not found after the option name. 11. **Missing ';' sign:** Option definition should end with character ;, but not found 12. **Missing '{' or '}:** Character { or } is found without pair 13. **Incorrect keyword:** Check OPT file. 14. **Incorrect type of the keyword:** Check OPT file. 15. **Incorrect value:** The value probably is defined in incorrect type or enumeration 16. **Required keyword is missing** 17. **Keyword should be found in AIC** 18. **Required keyword repeated:** Keyword should be repeated in AIC
"... not accessible, log option -> off"	- Logfile is not accessible, the log option might be turned off earlier.
"Startup file ... not accessible"	- Central startup file defined in a STARTUP_EXE option can not be found
"Working directory ... not accessible"	- The WORKING_DIRECTORY of STARTUP_EXE, COMPONENT_INIT or COMPONENT_AVAIL option is not accessible, probably does not exist.
"File to be read ... not accessible"	- Checking of existence of file defined in FILE_READ failed, probably does not exist or wrong path

Error message	Reason
“Component ... not accessible”	- Checking of existence of NAME defined in COMPONENT_INIT or COMPONENT_AVAIL failed, probably does not exist or wrong path
Success	**Meaning**
“Loading Central Setup ... -> Loaded”	- Successful load CENTRAL.OPT and CENTRAL.AIC
“Checking Central Setup ... -> OK”	- No error found

Check startup configuration (`STARTUP.AIC`)

Requirements:

– `STARTUP.AIC` and `STARTUP.OPT` must exist and well-defined.

– `DOCSTARTUP.EXE` must exist in `D:\CENTRAL\PROGRAM`

Error message	Reason
“CreateProcess() ...“	- DOCSTARTUP.EXE not found or wrong directory
“-> Error: FILE_COPY(...,...) ...“	- File copy operation failed
“-> Warning: FILE_COPY(...,...) ...“	- File copy operation failed, but not critical error
“-> Error: PATH_CHK(...) ...”	- Path does not exist
“-> Warning: PATH_CHK(...) ...”	- Path does not exist, but not critical error
“CreateProcess(D:\CENTRAL\TOOLS\ACFO..”	- ACFO utility not found
Success	**Meaning**
“Checking StartUp Setup ... -> OK”	- Startup configuration correct

Check Windows NT Address Resultion Protocol (ARP) tables

Error message	Reason
“Warning: ARP table – entries could not be made static.”	— Address resolution protocol tables could not be made.
Success	**Meaning**
“OK: ARP table entries made static.”	— Address resolution protocol table entries successfully made.

Check Datex-Ohmeda network configuration (NETWORK.AIC)

Requirements:

– NETWORK.AIC and NETWORK.OPT must exist in D:\CENTRAL\SETUP and well-defined.

Error message	Reason
"Loading \CENTRAL\PROGRAM\NETWORK.OPT failed - line=...: .... " "Loading \CENTRAL\PROGRAM\NETWORK.AIC failed - line=...: .... "	See Check central supervising configuration
"...No network defined"	No network defined in the NETWORK.AIC
"Network ...'s object is empty"	NETWORK definition found, but empty
"Network ...'s IPAddress not found"	NETWORK definition found, but MonGate option not
"Network ...'s name not found"	NETWORK definition found, but Name option not
"Network ...'s type not found"	Type option of NETWORK definition not found
"No monitor belong to this Central"	Central type DOC should have monitors
"There are monitors which belong to this ViewStation"	ViewStation type DOC should not have any monitor
"Network ...'s port not found"	MonGate_Port option of NETWORK definition not found
"Network ...'s ID not found"	ID option of NETWORK definition not found
"Interconnecting Network ...'s IP not found"	Network to be connected to the local Central has no IP address
"Interconnecting Network ...'s Port Number not found"	Network to be connected to the local Central has no port number
"No connection backward" or "Connection from ... to ... is one-way"	Connection between networks is only one-way. It should be two-way
"Local Central Network not found, probably invalid IP address or wrong interconnection"	Invalid IP address, incorrect interconnection or IP address can not be resolved (no name server or NetBios interface is not installed)
"Interconnecting from ... to Network ID ... not found"	The defined network ID can not be found in the NETWORK.AIC file, that network could be removed before.
"Validating IP: ... "	TCP/IP or WinSock error. See Check status of TCP/IP and Windows Socket (WinSock) 2.0

Success	Meaning
"Loading Central Network Setup ... -> Loaded"	- File loading successful
"Initializing Winsock 2.0 ... -> OK"	- TCP/IP and WinSock 2.0 present

Success	Meaning
“Local central network name: ...”	- Name of the local central
“Local central network type: ... “ and “Validating network type ... -> OK”	- Type and successful validation of central type
“Local monitors ... -> OK”	- Number of local monitors
“Local central network IP address: ...”	- IP address of the local central
“Local central network port number: ...”	- Port number of the local central
“Local central network ID: ... ”	- Network ID of the local central
“Interconnecting Network ...'s IP: ...”	- The IP address of the central interconnect to the local one
“Interconnecting Network ...'s Port Number: ...”	- The port number of the central interconnect to the local one
“Validating IP: ... -> OK”	- Successful validation of the IP address
“Validating Interconnection with Network ... -> OK“	- Successful validation of interconnection with other DOC
“Validating Interconnection of network ... -> OK”	- Interconnection of that DOC is correct

Check view configurations (`MONVIEWS.AIC`)

Requirements:

- network.aic and network.opt must exist in D:\central\setup and well-defined.
- monviews.aic and monviews.opt must exist in D:\central\setup and well-defined.

Error message	Reason
“Loading \CENTRAL\SETUP\NETWORK.OPT failed - line=...: .... “ “Loading \CENTRAL\SETUP\NETWORK.AIC failed - line=...: .... “	See Check central supervising configuration
“Loading \CENTRAL\SETUP\MONVIEWS.OPT failed - line=...: .... “ “Loading \CENTRAL\ SETUP\MONVIEWS.AIC failed - line=...: .... “	See Check central supervising configuration
“No network defined”	- No NETWORK defined in NETWORK.AIC
“No view configuration defined”	- No view configuration (VIEW_CONFIG) defined in MONVIEWS
“View configuration not found”	- VIEW_CONFIG defined, but empty
“Invalid page object in view configuration”	- PAGE is defined, but probably empty
“Invalid monitor object”	- MONITOR is defined, but empty
“Central station should show local monitors in Default view configuration”	- Central type DOC should not show remote monitors in the Default view configuration
“Monitors in the same page should belong to the same network”	- The monitors that belong to the same page should belong to the same DOC network

Error message	**Reason**
"Network ID ... not found"	- Monitor defined to belong to a DOC, but the network not found in NETWORK.AIC by ID, probably removed or the monitor is moved to other network.
"Monitor ... not found"	- The monitor defined in a view configuration, but do not belong to the network with the ID specified in NETWORK.AIC, probably wrong NETWORK ID or the monitor has been removed from the NETWORK.AIC
"Page ... contains no monitor"	- Page, if defined, should contains at least one monitor
"No page defined in view configuration"	- View configuration, if defined, should contains at least one page
"Default view configuration not found"	- There is no Default configuration in MONVIEWS.AIC
Success	**Meaning**
"Loading Central Network Setup ... -> Loaded"	- File loading successful
"Loading Central View Setup ... -> Loaded"	- File loading successful
"Processing view configuration ... "	- A view configuration is under processing
"Processing page ... "	- A page is under processing
"Monitor ... ID ..., Group ID ..., Network ID ... -> OK."	- Successful validation of a monitor and its name, plug id, group id and network id.

Check general configuration (`SETUP.AIC`)

Requirements:

– `SETUP.AIC` and `SETUP.OPT` must exist in `D:\CENTRAL\SETUP` and well defined.

Error message	**Reason**
"Loading \CENTRAL\PROGRAM\SETUP.OPT failed - line=...: .... " "Loading \CENTRAL\PROGRAM\SETUP.AIC failed - line=...: .... "	- See Check central supervising configuration
"No setup defined"	- SETUP.AIC probably empty
"AS/3 network board is not specified in general setup"	- MONGATE_BOARD option not found
"Lookup AS/3 Network Adapter ... in the Registry -> Not found"	- The adapter is not defined, not installed, is used for TCP/IP or not SMC8432 or not 3COM EtherLink XL
"The NDISHOOK driver isn't in the path"	- NDISHOOK.SYS not found in D:\CENTRAL\PROGRAM
"User probably doesn't have sufficient access rights to load drivers."	- Confused error, probably Check current account at "Load and unload device drivers" failed.
"The NDISHOOK.SYS driver is 'partially' unloaded"	- Run W32NNTSC.EXE (D:\CENTRAL\MONITORGATE) to remove the driver, also check that W32NNTSC.EXE should be run as a STARTUP_EXE in CENTRAL.AIC

Error message	Reason
“Testing AS/3 Network Adapter & Cable -> failed”	- Adapter installation might failed
“Network cable probably not connected”	- No traffic on the AS/3 network
“Time synchronization option is not defined”	- TIME_ADJUSTMENT_ENABLED option is not defined
“Time server IP is not defined”	- TIME_ADJUSTMENT_ENABLED is TRUE, but TIME_SERVER_ADDRESS is not defined
“Validating IP: ...”	- Validating Time Server IP failed. See Check status of TCP/IP and Windows Socket (WinSock) 2.0
“Server does not support Time Protocol”	- Time Server does not support Time Protocol (TCP/IP, port 13)
“Server refuses Time Protocol Request”	- Time Server refuses Time Protocol Request (TCP/IP, port 13, connection establishing request)
“Time Protocol Request failed”	- Connection to Time Server success, but no answer
“DEFAULT_PRINTER is empty”	- DOC system should have a default printer
“DEFAULT_RECORDER value must be RECORDER”	- DEFAULT_RECORDER option should have the value RECORDER.
“Default printer connected to no port”	- Default Printer needs to connected to a valid port
“No printer installed”	- No printer installed on the machine
“Default printer ... not found”	- Described printer not installed or incorrect printer port
“... has no name” or “... has no port”	- Valid printer should have name and port
“... and ... option has the same value”	- SINGLE_VIEW_WAVE and NUMBERFIELD options should have different values or OFF
“... user not defined”	- Service user and R&D user should be defined
“... no password to ...” and “invalid ... password”	- Password missing or invalid

Success	Meaning
“Lookup AS/3 Network Adapter \Device\EI90x2 in the Registry ... -> Found.”	- Monitor network adapter device name found in registry
“Open AS/3 Network Adapter \Device\EI90x2 ... -> OK.”	- Monitor network adapter opened successfully
“AS/3 Network Adapter Address 00.50.04.79.38.6F -> OK”	- Found valid monitor network adapter Ethernet address
“Testing AS/3 Network Adapter & Cable ... -> OK.”	- Network adapter and cable checking successful
“Close AS/3 Network Adapter \Device\EI90x2 ...	- Network adapter closed

Success	Meaning
-> OK.”	
“Time synchronization OFF”	- Time synchronization with a time server disabled
“Check Path <path name> = <path> -> OK.”	- Setup path checked and exists
“-> Warning: <path name> = <path> not exist.”	- Setup path checked but not found; probably not needed since only warning given
“Default recorder <recorder name> ... -> OK.”	- Recorder definition found
“Check Path REC_SPOOL_DIR=<recorder data spool directory>... -> OK.”	- Recorder data spool directory found
“Default printer <printer name>... -> OK.”	- Default printer definition found
“Printer PRNN_NAME attached to port <printer port name> ... -> OK.”	- Printer N connection to port < printer port name > has been defined
“Check if Recorder type is <valid printer type>... -> OK.”	- Recorder definition is valid
“Check if Recorder port is LPT1 ... -> OK.”	- Recorder port definition is valid
“Check Service User Account ... -> OK.”	- Service user account definition is valid
“Check Service Password ... -> OK.”	- Service user password definition is valid
“Check Exit Password ... -> OK.”	- Exit password definition is valid
“Check Exit Password ... -> OK.”	- Exit password definition is valid

Check system licenses

Requirements:

– SMART-KEY or licensed password.

Error message	Reason
“The system has no license”	No Smart-Key installed
Success	**Meaning**
“Number of licensed monitors is N -> OK.”	- Found Smart Key
“Check number of licensed monitors ... -> OK.”	- Number of licenses is valid

10 TROUBLESHOOTING

– If the monitor is connected to the monitor network, the symbol is displayed on the monitor's screen. NOTE: In Compact Monitor, the battery operation symbol overrides the network symbol.

– If none of the monitors can be connected to the network, the fault is probably related to the cabling between the Central's network board and hub.

– If only one monitor can be logged into the network, the fault is probably related to the smart key: the smart key is probably faulty, or not inserted.

– If all the monitors, except one, can be connected to the network, the fault is probably related to the cabling between the monitor and hub, or in the monitor, network board or hub.

– Use also DOCCheckup utility to find if the configuration is properly done, see page 68.

The steps for the network troubleshooting are outlined in a flowchart in Table 10-1.

10.1 Compatibility limitations

You can only connect the monitors with the software S-XXX95, or newer to the network with the S/5 Central. If there are monitors using the record keeping software, they must be of the same revision.

You can only admit a patient from the Central (give the patient ID) with monitors equipped with a S-XXX97 software, or newer.

If the monitors are equipped with L-ARK99(A) or S/5 ARK software license, they require the S-CNET99, ver.1.1, or newer, network software.

For monitor-to-monitor communication over different networks, the monitor software level S-XX99 is required.

To enable connecting ViewStations to the system, the Central requires the software S-CNET99 Ver 1.2, or newer.

NOTE: Japanese monitors (softwares S-ANE97-31 or S-ICU97-31) must not be connected to the same network with other monitors of any other language or revision, because their incompatibility may cause errors in the network communication.

10.2 Network troubleshooting flowchart

Table 10-1 General troubleshooting

Network communication problem?	Examine the network architecture and topology using the original plan documentation as a reference. Confirm that the network configuration is appropriate (use DOCCheckup document)	All monitors of a network affected, proceed A) Only one or some monitors affected, proceed B).
A) All monitors of a network affected?	Check the Mon/IC -Net cable and its connecetions. Replace if necessary Check the Central's/ViewStations patch cable and its connections. Replace if necessary. Test the horizontal cabling using a cable scanner.	Proceed to Central's/ViewStation's troubleshooting, see the table below
B) Some monitors of the network affected?	Check the Mon-Net cable and its connections. Replace if necessary. Check that the monitor's patch cable and its connections. Replace if necessary. Check that the smart key is installed and of right kind (defines the number of the monitors, max. 32). Also confirm that the com port of the computer is functioning properly. Test the horizontal cabling using the cable scanner.	Proceed to monitor troubleshooting, see the corresponding Technical Reference Manual.

10.3 Central/ViewStation troubleshooting chart

For the Central or ViewStation troubleshooting refer to the table above.

Table 10-2 Central/ViewStation Troubleshooting

What if...	Maybe	Try
Central/ViewStation		
Nothing functions	Central is not connected to wall socket.	Unplug and replug the power cord and check that it is intact.
Keyboard keys have no effect on the Patient Screen.	The keyboard cable may be loose or defective.	Confirm that the Keyboard-IC Cable is firmly connected. If necessary, replace the cable.
	The controller board may be defective.	If necessary, replace the board.

What if...	Maybe	Try
Function keys have no effect on the screen.	The cable to the membrane keypad may be loose.	Confirm that the cable is firmly connected.
	The membrane keypad may be defective.	If necessary, replace the keypad.
	The controller board may be defective.	If necessary, replace the board.
Alphanumeric keys have no effect on the screen.	The cable to the controller board may be loose.	Confirm that the cable is firmly connected.
	The alphanumeric keyboard may be defective.	If necessary, replace the keyboard.
	The controller board may be defective.	If necessary, replace the board.
ComWheel has no effect on the screen.	The cable to the controller board may be loose.	Confirm that the cable is firmly connected.
	The rotary wheel may be defective.	If necessary, replace the wheel.
	The controller board may be defective.	If necessary, replace the board.
The system will not start, or halts immediately after startup.	The configuration settings may be defective.	Check CENTRAL.LOG file for startup report. Revise the network setup. If necessary, restore the default setup.
	The network board may be loose or defective.	Confirm that the network board is firmly connected. If necessary, replace the board.
Patient Screen doesn't function.	The display power cable or the display data cable may be loose or defective.	Confirm that the display power cable and the display data cable are firmly connected. If necessary, replace the cables.
	The display controller board(s), B-CDISP, may be loose or defective.	Confirm that the board is firmly connected. If necessary, replace the board.
	During software installation the Network Manager configuration is selected.	Reinstall the Network software (S-CNETXX or S-VNETXX).
	Patient Screen may be defective.	If necessary, replace the display.
Patient Screen includes distortion	The display controller board may be defective.	If necessary, replace the board.

What if...	Maybe	Try
Patient Screen includes regular stripes.	The Display Controller, B-CDISP may be defective.	If necessary, replace the board.
Status Screen doesn't function.	The display power cable, or the display data cable may be loose or defective.	Confirm that the display power cable and the display data cable are firmly connected. If necessary, replace the cables.
	The display power cable, or the display data cable may be loose or defective.	Confirm that the display power cable and the display data cable are firmly connected. If necessary, replace the cables.
Record Keeping		
The record keeping menus cannot be found, or they are in the wrong language, or in two languages.	Menus are not in the specified directory.	Start the Network Setup software and open the General Setup window. Ensure that the 'Path 1 to Menus' indicates a valid directory. NOTE: 'Path 1 to Menus' and 'Path 2 to Menus' should be similar unless 'Path 1 to Menus' indicates a directory in the office network.

For the monitor troubleshooting, refer to its documentation.

10.4 Error messages

Following messages may be displayed on the Patient or Status Screens.

Table 10-3 Screen messages

Message	Cause	Solution
Disk is almost full	The patient data disk is almost full. The warning will be given approximately one week in advance.	The value of the patient data storage time has to be reduced in the setup. Contact the network administrator.
Printer error (with an explanatory note)	The printer/recorder is out of paper.	Add paper.
	Printer is off-line.	Ensure that the printer power cord is properly connected and the power is ON, and on-line.
	The printer is not ready or cannot be accessed.	Check that the cables are connected properly and that the power is ON.
	Printer/recorder is not connected properly.	Check the connecting cable
	Recorder's writing head is cold or hot	Wait for the recorder warm up or cool down.

10.5 Technical assistance

For technical assistance, do not hesitate to consult your authorized Datex-Ohmeda distributor. Be prepared to describe the problem in detail and to provide the distributor with the following information.

- Type and serial number of the Central or ViewStation. The serial number can be found on a sticker on the small lever on the front panel.
- Serial number of the Display Controller Board(s), B-CDISP. The serial number can be found on a sticker on the edge of the board.
- Printouts of `NETWORK.AIC, SETUP.AIC, MONVIEWS.AIC, STATSCRN.AIC, STARTUP.AIC, CENTRAL.AIC` and `MONITORS.CFG`. The files can be printed through service pages of the Status Screen.
- Printouts of version data from networked monitors through service pages of the Status Screen.
- Error logs, especially `CENTRAL.LOG`, through service pages of the Status Screen.

11 PLANNED MAINTENANCE

Perform the following steps at least once a year and always after service.

You need an allen wrench and documents for the disk scanning program,

Step	Procedure
	Check that all the components of the Central/ViewStation and displays are clean and undamaged. Make sure that the cooling holes are not obstructed.
	Check that all Mon/IC-net and Mon-net cable connections are secure, and that no cables are pulled taut. Make sure that the wallboxes are clean and undamaged.
	Check that the system starts up normally, and that all active network devices register to the network.
	Check that the display contrast and brightness, as well as the vertical and horizontal position, are adequately adjusted. For readjustments, please refer to the display's documentation.
	Check that the Central Keyboard keys function properly by pressing the keys one by one.
	Check that the ComWheel functions properly by turning the ComWheel clockwise and counterclockwise.
	Check that the system clock shows the correct time. For readjustments, please refer to the section *Installation* of this manual.
	Print the service pages and check that the contents of the pages is OK.
	Remove all temporary files that might be stored on the hard disk.
	Back up `SETUP.AIC, STATSCRN.AIC, MONVIEWS.AIC, STARTUP.AIC, CENTRAL.AIC` and `NETWORK.AIC` files. Also back up `MENUBLD.AIC` file if it is stored on the hard disk.
	Run a disk scanning program. For further instructions, please refer to documentation delivered with the computer.
	Shut the system down, and disconnect it from the power outlet. Open the system unit cover and remove dust accumulated around the power supply unit.

For planned maintenance of printers, power supplies, and hubs, please refer to the manuals delivered with the device.

PART II Product Service guide

12 DATEX-OHMEDA PRODUCTS

12.1 Network Software, S-CNET99 and ViewStation Software S-VNET99

The Network Software, S-CNETxx, and the ViewStation Software, S-VNETxx, consist of several functional components.

12.1.1 Software architecture

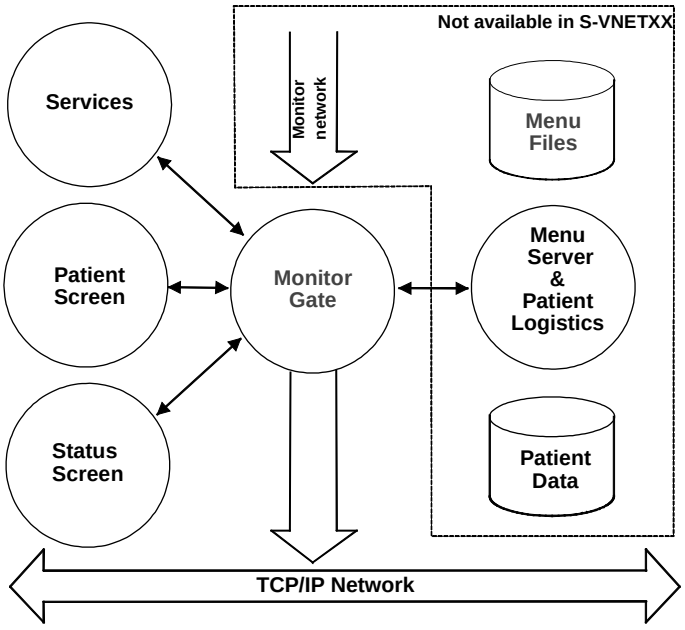


Figure 12-1 General architecture of S-CNETxx and S-VNETxx software

The main components are:

– **Monitor Gate** component manages communication between the software components and monitors, as well as between components themselves.

– **Patient Screen** component provides user interface for patient data and alarms.

– **Status Screen** component provides character-based user interface for system status.

– **Menu Server and Patient Logistics** is responsible for storing patient data in disk drive, retrieving stored data to monitors, and providing menu descriptions for anesthesia record keepers when needed. Not in S-VNETxx.

– **Services** component:
Bed-to-bed service provides monitor-to-monitor communication service for monitors. Not in S-VNETxx.
Printer services provide monitors access to global printing resources
Mode services are used for storing and retrieving monitor settings. Not in S-VNETxx.

12.1.2 Directory Structures

When the Central/ViewStation is installed at the factory, the software is located in the D:\Central directory, and more specific directory structure can be found in the readme.txt file.

NOTE: Be sure to edit only the files that are meant to be edited.

Configuration and other general folders

D:\	CENTRAL\	B2BMANAGER\	The folder for the monitor-to-monitor communication component files.
		GSPUI\	The folder for the Patient Screen files.
		MENUS	See more specific explanation below.
		MENUSERVER\	The folder for the record keeping menu server
		MODESERVER\	The folder for the user mode files.
		MONITORGATE	The folder for communication between the components
		PRINTERSERVICES\	The folder for the printer service files.
		PROGRAM\	The folder for the network software program files.
		SETUP\	The folder for files created/needed during system setup.
		STATUSSCREEN\	The folder for the Status Screen files.
		TOOLS\	The folder for tool program files.

Patient data folders

The following files and directories are created when the network software is started for the first time after setup. If these default directories are not used, the new directories must be created before the network setup.

If the network will communicate with the Datex-Ohmeda IM network, the following files and directories must be copied to the IM server.

D:\	CENTRAL\	PATDATA\	Default directory for patient data files and pre-operatory data files.
		111\ 112\ 113\	Examples of monitor location level directories. There is one directory for each monitor location. The name of the directory is the monitor ID plug number.
		111\52302T01.LCK	Lock file for case 52302T01. Indicates that the case directory is reserved for the monitor with the ID number 111, which is saving data to the corresponding case directory. The lock file is removed when the case is closed.
		111\52302T01\	Case directory. The data of one case/monitoring period is saved to a single directory. The case directory can, for example, contain the following files: 52302T01.EVT Contains record keeping events. 52302T01.PAT Contains patient identification information. 52302T01.PHY Contains physiological data. 52302T01.PH1 Contains physiological data. 52302T01.PH2 Contains physiological data. 52302T01.PH3 Contains physiological data. 52302T01.STA Contains case status information (start and end times of the case). ACT_CASE.LOG Contains information on all subcases in this case directory.
		PATDATA\ARC\	The structure of this directory corresponds to the patient data directory. The cases older than setup value 'Patient list time range' and preoperative cases (cases containing no trend data) older than 'Preop list time' are moved to this directory.
		CASEBCFG\	Directory for archived record keeper configuration data needed during post-processing.
		CASEBNDX.DAT	Contains information on record keeper configuration data in CASEBCFG\ -directory.

Menu folder

D:\	CENTRAL\	MENUS\	Default menu file set for a configuration without S/5 Record Keeper.* Directory for the S/5 Record Keeper menus
		ENG\ENGUFRM.0A1 ENG\ENGED1.TXT GER\GERUFRM.0A1 GER\GERED1.TXT FRE\FREUFRM.0A1 FRE\FREED1.TXT DUT\DUTUFRM.0A1 DUT\DUTED1.TXT ITA\ITAUFRM.0A1 ITA\ITAED1.TXT SPA\SPAUFRM.0A1 SPA\SPAED1.TXT DAN\DANUFRM.0A1 DAN\DANED1.TXT FIN\FINUFRM.0A1 FIN\FINED1.TXT SWE\SWEUFRM.0A1 SWE\SWEED1.TXT NOR\NORUFRM.0A1 NOR\NORED1.TXT Z_UNITS.TXT D_UNITS.TXT	* NOTE: If user-configured menus (also called casebase) are used, all these files should be removed.

Mode folder

D:\	CENTRAL\	MODESERVER\ MODES\	A folder where different user modes are saved
		\AS3ARK\v800\G1, G2, G3... \CS3\v700\...	

12.2 Start-up Procedure

12.2.1 After having exited the program

When the computer is on and the operating system is running:

- Double click the Datex-Ohmeda Central icon on the screen.

12.2.2 After having switched off the Network Computer

When the computer has been turned off after exiting program, to restart:

1. Switch on the Network Computer by pressing the **Power ON/OFF** switch.
2. Switch on the display units (Patient Screens, Status Screen) and the printer.
3. In the lower left corner of the screen select ***Start - Programs - D-O Network - Central***.

During the start-up, following steps are taken:

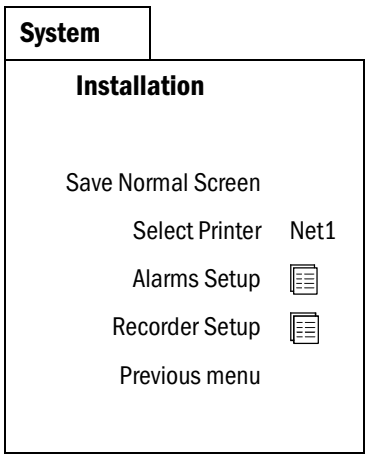
1. Checking the system configuration. If a critical error occurs, the system will not start. Errors are listed to the CENTRAL . LOG file, which can be viewed and printed in the File View page, see appendices.
2. Essential parts of the record keeping configuration are saved to the CASEBFG -directory for postprocessing applications, and if the setup option 'Path 1 to menus' differs from the 'Path 2 to menus', the configuration files are copied from the first path to the second one.

12.3 System/Installation menu

Most typical installation settings are collected to the installation menu of the Central's software, so that they can be changed after initial installation on the run, that is, without switching off the network software. These changes are valid only as long as the software is running.

1. Press **Setup** key and select ***System*** and ***Installation***.
2. Give the password (default is BBBBB, this may have been changed during installation).

In the menu, you can save the desired 'Normal screen' to which the display returns after the **Normal Screen** key is pressed, select the printer to which the Central prints of those configured into the system and access ***Alarms Setup*** and ***Recorder Setup*** submenus.



12.3.1 Alarms setup

1. Select ***Alarms Setup***.
2. Set audible alarms on or off, select which priority alarms are shown in the Patient View, and adjust the alarm volume.
3. Confirm the changes by selecting ***Previous Menu*** or by pressing **Normal Screen**.

12.3.2 Recorder setup

1. Select ***Recorder Setup***.
2. Set autoalarm recording on/off, select paper speed, select the strip length (20 or 30 seconds) for alarm recording, and the length of the manual recording (30 s or continuous).

12.4 Service Pages

The Central provides a service interface to diagnose and identify the source of a problem and to isolate the problem for service and repair.

12.4.1 Viewing Service Pages

To open the service page:

1. On the Status screen, click the ***Services*** tab.
2. The program prompts for the user identification and the password.
3. Give the password (default password is 'CCCCC', and it may have been changed during system setup).
4. Click the tab to select the desired page of ***Components, Monitor information, Network boards, Network messages*** and ***File viewer***.

Printing Service Information

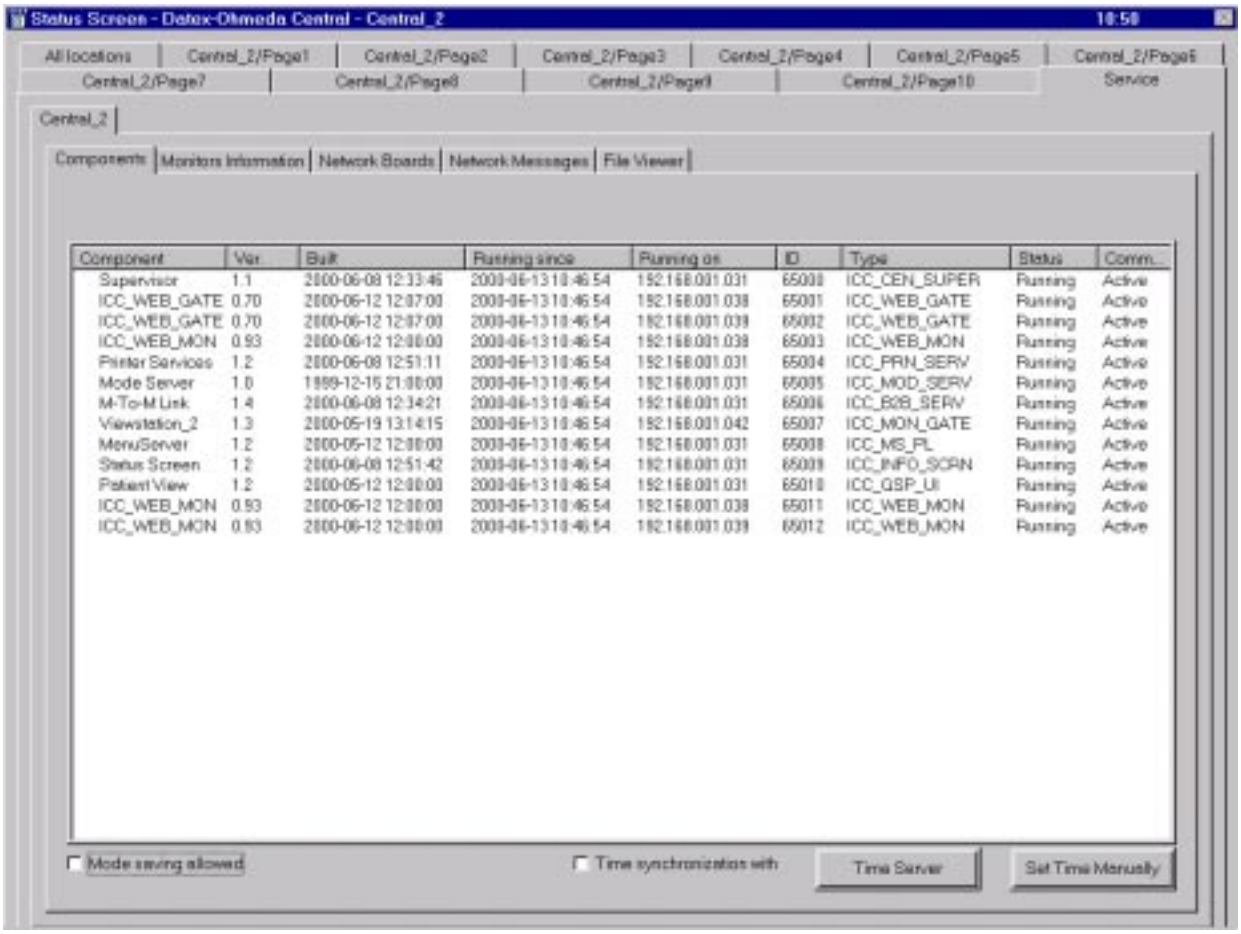
Service information saved in the log files can be printed via File View page, see page 101.

The information displayed on each page can be printed by clicking the right mouse button.

12.4.2 Components page

Information on components (processes) that are connected to the Central are displayed on this page. The following information is included:

- **Component**: component name
- **Ver.**: component version
- **Built**: date when the component was built
- **Running since**: date and time when component was launched
- **Running on**: IP address of the computer the component is running on
- **ID**: ID of the component (given dynamically by the Monitor Gate)
- **Type**: type of the component
- **Status**: status of the component (Running/Stopped)
- **Communication**: communication status (Active/Connected/Disconnected)


Status Screen - Datex-Ohmeda Central - Central_2
10:50
All locations
Central_2/Page1
Central_2/Page2
Central_2/Page3
Central_2/Page4
Central_2/Page5
Central_2/Page6
Central_2/Page7
Central_2/Page8
Central_2/Page9
Central_2/Page10
Service
Central_2
Components
Monitors Information
Network Boards
Network Messages
File Viewer
Component Ver. Built Running since Running on ID Type Status Comm.
Supervisor 1.1 2000-06-08 12:33:46 2000-06-13 10:46:54 192.168.001.031 65000 ICC_CEN_SUPER Running Active
ICC_WEB_GATE 0.70 2000-06-12 12:07:00 2000-06-13 10:46:54 192.168.001.038 65001 ICC_WEB_GATE Running Active
ICC_WEB_GATE 0.70 2000-06-12 12:07:00 2000-06-13 10:46:54 192.168.001.039 65002 ICC_WEB_GATE Running Active
ICC_WEB_MON 0.93 2000-06-12 12:00:00 2000-06-13 10:46:54 192.168.001.038 65003 ICC_WEB_MON Running Active
Printer Services 1.2 2000-06-08 12:51:11 2000-06-13 10:46:54 192.168.001.031 65004 ICC_PRN_SERV Running Active
Mode Server 1.0 1999-12-15 21:00:00 2000-06-13 10:46:54 192.168.001.031 65005 ICC_MOD_SERV Running Active
M-To-M Link 1.4 2000-06-08 12:34:21 2000-06-13 10:46:54 192.168.001.031 65006 ICC_B2B_SERV Running Active
Viewstation_2 1.3 2000-05-19 13:14:15 2000-06-13 10:46:54 192.168.001.042 65007 ICC_MON_GATE Running Active
MenuServer 1.2 2000-05-12 12:00:00 2000-06-13 10:46:54 192.168.001.031 65008 ICC_MS_PL Running Active
Status Screen 1.2 2000-06-08 12:51:42 2000-06-13 10:46:54 192.168.001.031 65009 ICC_INFO_SCRN Running Active
Patient View 1.2 2000-05-12 12:00:00 2000-06-13 10:46:54 192.168.001.031 65010 ICC_QSP_UI Running Active
ICC_WEB_MON 0.93 2000-06-12 12:00:00 2000-06-13 10:46:54 192.168.001.038 65011 ICC_WEB_MON Running Active
ICC_WEB_MON 0.93 2000-06-12 12:00:00 2000-06-13 10:46:54 192.168.001.039 65012 ICC_WEB_MON Running Active
Mode saving allowed
Time synchronization with
Time Server
Set Time Manually

Selections on this page:

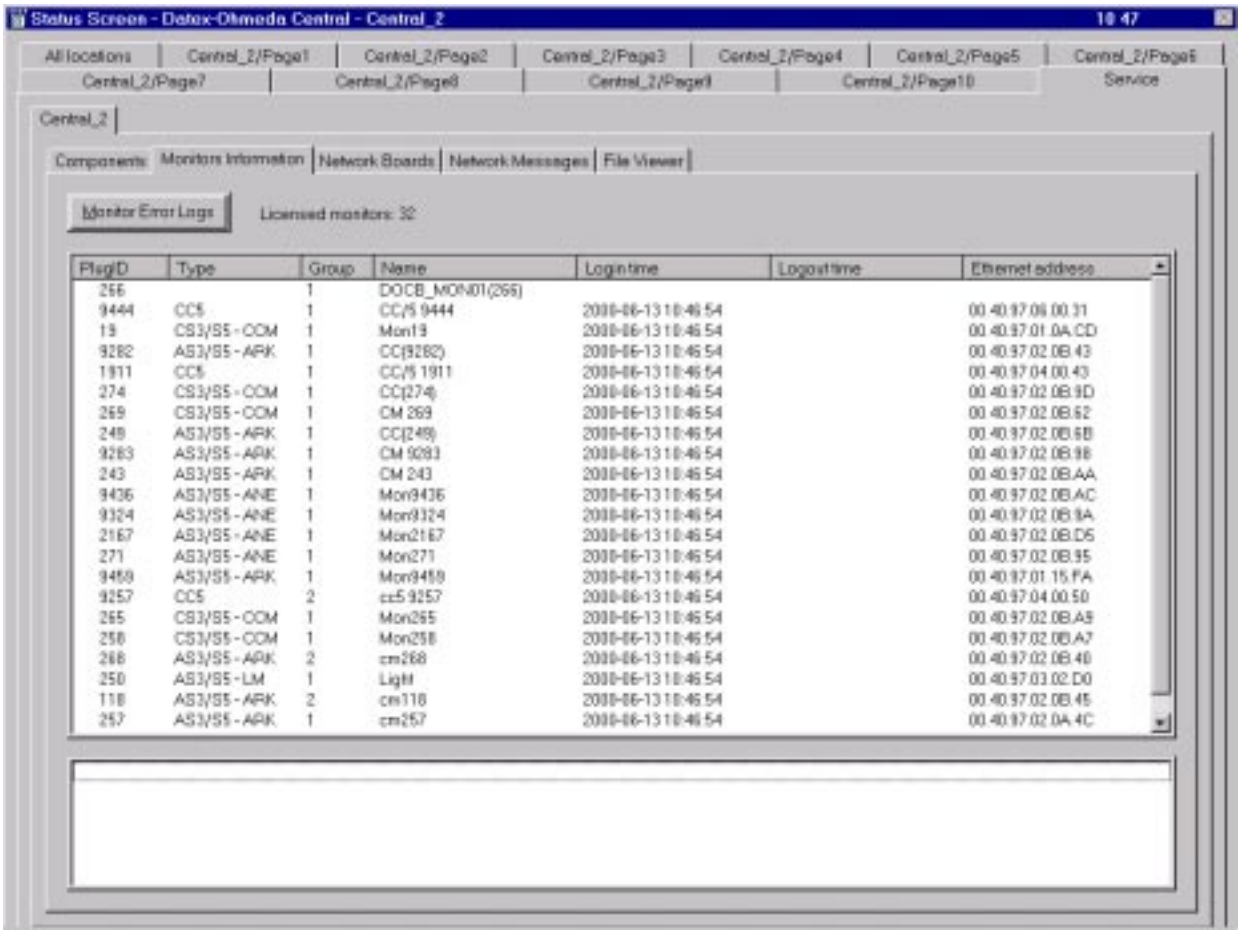
- **Mode saving allowed**: It is possible to save current user modes into Central from a monitor.
- **Time synchronization with**: Allows users to define the time server that the Central clock is synchronized to.

Additionally there are buttons for ***Time server*** and ***Set Time Manually***, which enable to do the corresponding tasks also on the run.

Monitors Information page

This page gives an overview of monitors that reside in the same network with this Central. The following information is displayed:

- **Plug ID**: Location ID of the bedside device.
- **Type**: Monitor type and monitor software in use
- **Group**: The monitor group the monitor belongs to (monitor groups are used when modes are loaded from / saved to the Datex-Ohmeda Central).
- **Name**: Name of the monitor location.
- **Login time**: Date and time when the monitor logged on to the network.
- **Logout time**: Date and time when the monitor logged out of the network.
- **Ethernet address**: Ethernet address of the monitor.



By double-clicking a monitor you can get the following information from the selected monitor:

- **Software Version**: Monitor software version and date
- **Module Software Version**: Module software version and date for each module
- **Module Unit ID:** Control number, date and serial number of each module

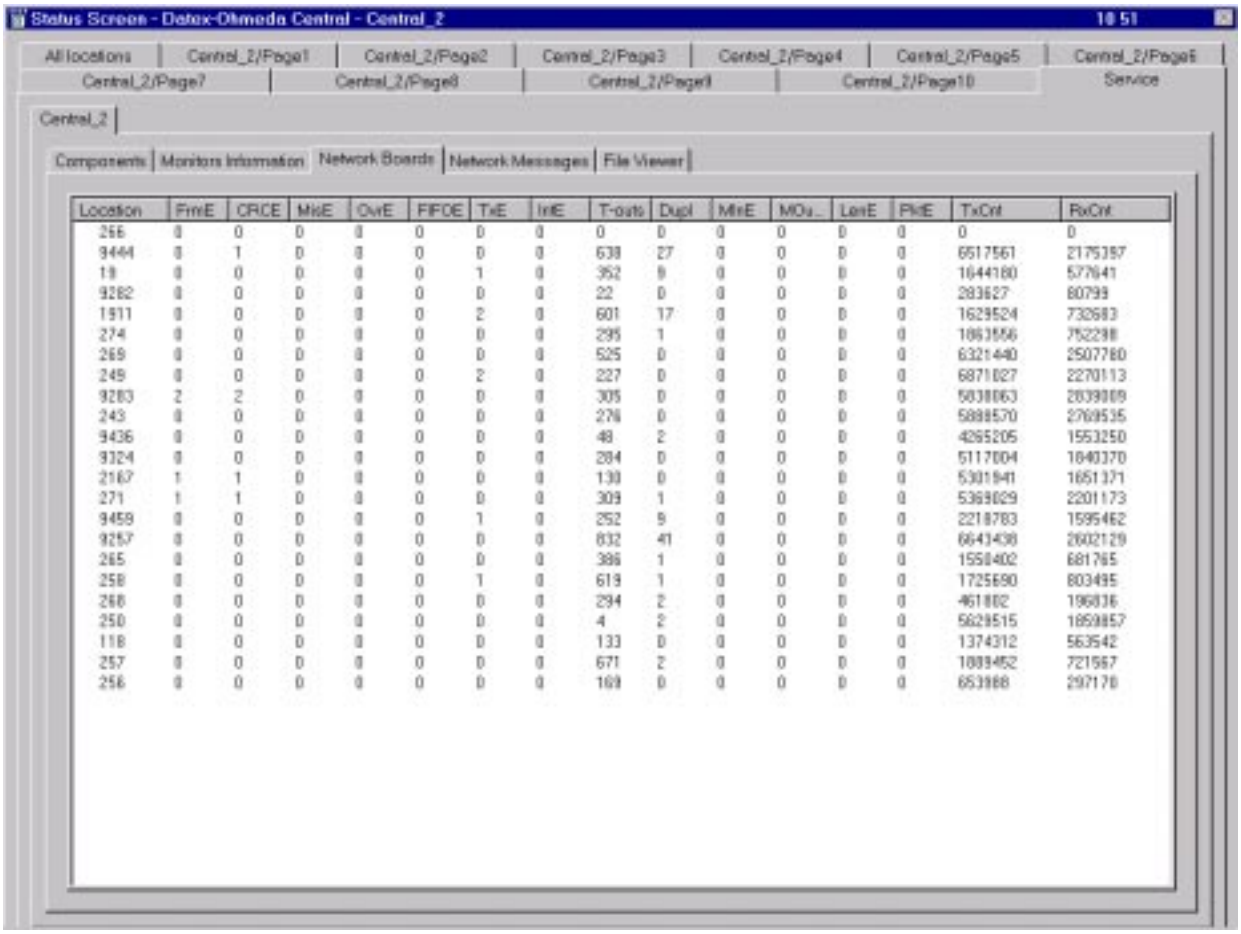
By clicking the ***Monitor error log***, you can view the monitor error log file, which is automatically created for each monitor. This file can also be printed via File Viewer page, or by clicking the left button of the mouse.

Network Boards page

This page displays general information about the network driver and network communication interface at each connected monitor. Monitors send statistical information to Central automatically every two minutes and upon request.

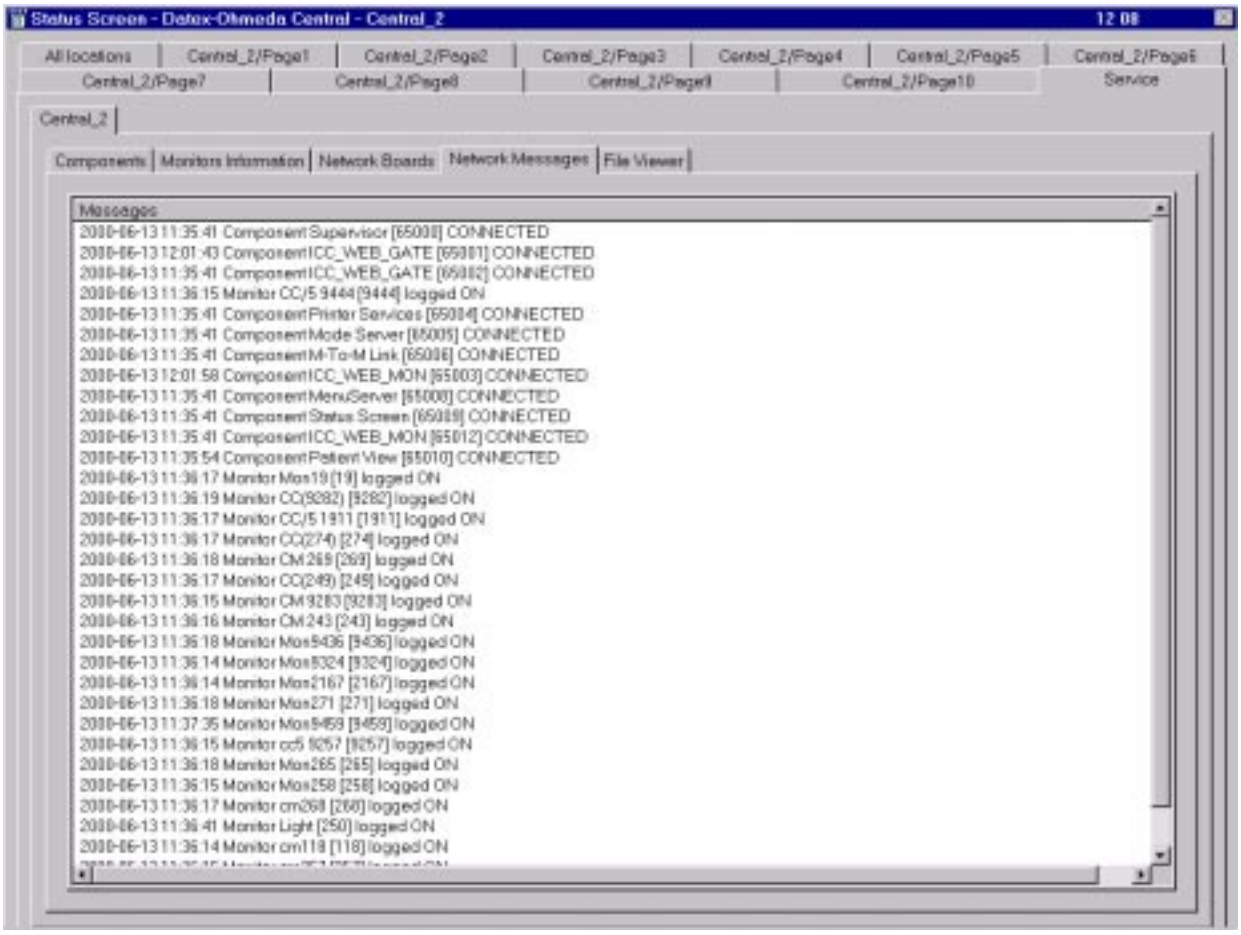
The following values are displayed:

- **Location**: Location ID of the device
- **FrmE:** Indicates the number of received data packets with incorrect frame structure. This type of error refers to physical layer problems. The value of FrmE is typically less than 10. High values indicate hardware errors in the network board.
- **CRCE**: Indicates the number of received data packets with incorrect checksum. This type of error refers to physical layer problems. The value is typically less than 10.High values indicate hardware errors in the network board.
- **MisE**: Indicates the number of missed data packets due to overload. The value is typically less than 10. High values indicate hardware errors in the network board.
- **OvrE**: Indicates the number of overrun data packets due to overload. This type of error refers to network board errors. The value is typically less than 10. High values indicate hardware errors in the network board.
- **FIFOE**: Indicates the number of hardware errors on the network board. The value of FiFO must be 0.
- **TxE**: Indicates the number of transmission errors due to excessive collisions. This type of error refers to physical layer problems. The value of TxE is typically less than 10.
- **IntE**: Indicates problems in the network reception. The value is typically less than 10. High values indicate hardware errors in the network board.
- **T-outs**: Timeouts detected by the monitor
- **Dupl**: Indicates the number of duplicated data packets. The value of Dupl increases slowly.
- **MInE**: Unknown packet types in
- **MOutE**: Unknown packet types out
- **LenE**: Packet length error
- **PktE**: Errors in received packets
- **TxCnt**: Indicates the number of transmitted data packets since power-up.
- **RxCnt**: Indicates the number of received data packets since power-up.


Status Screen - Datex-Ohmeda Central - Central_2
All locations
Central_2/Page1
Central_2/Page2
Central_2/Page3
Central_2/Page4
Central_2/Page5
Central_2/Page6
Central_2/Page7
Central_2/Page8
Central_2/Page9
Central_2/Page10
Service
Central_2
Components
Monitors Information
Network Boards
Network Messages
File Viewer
Location FrmE CRCE MskE OvrE FIFOE TxE InfE T-outs Dupl MltE MOu.. LenE PktE TxCnt RxCnt
266 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
9444 0 1 0 0 0 0 0 638 27 0 0 0 0 6517561 2175357
19 0 0 0 0 0 1 0 352 9 0 0 0 0 1644180 577641
9282 0 0 0 0 0 0 0 22 0 0 0 0 0 283627 80799
1911 0 0 0 0 0 2 0 601 17 0 0 0 0 1629524 732683
274 0 0 0 0 0 0 0 295 1 0 0 0 0 1863556 752298
269 0 0 0 0 0 0 0 525 0 0 0 0 0 6321440 2507780
249 0 0 0 0 0 2 0 227 0 0 0 0 0 6871027 2270113
9283 2 2 0 0 0 0 0 305 0 0 0 0 0 5838063 2039809
243 0 0 0 0 0 0 0 276 0 0 0 0 0 5888570 2769535
9436 0 0 0 0 0 0 0 48 2 0 0 0 0 4295205 1553250
9324 0 0 0 0 0 0 0 284 0 0 0 0 0 5117004 1840370
2167 1 1 0 0 0 0 0 139 0 0 0 0 0 5301941 1651371
271 1 1 0 0 0 0 0 309 1 0 0 0 0 5369029 2201173
9459 0 0 0 0 0 1 0 252 9 0 0 0 0 2218783 1595462
9257 0 0 0 0 0 0 0 832 41 0 0 0 0 6641438 2602129
265 0 0 0 0 0 0 0 386 1 0 0 0 0 1558402 681765
258 0 0 0 0 0 1 0 619 1 0 0 0 0 1725690 803495
268 0 0 0 0 0 0 0 294 2 0 0 0 0 461802 196836
250 0 0 0 0 0 0 0 4 2 0 0 0 0 5629515 1859857
118 0 0 0 0 0 0 0 133 0 0 0 0 0 1374312 563542
257 0 0 0 0 0 0 0 671 2 0 0 0 0 1889452 721567
256 0 0 0 0 0 0 0 169 0 0 0 0 0 653988 297170

Network Messages page

Messages related to network communication are displayed on this page. Both the monitor network and Datex-Ohmeda (TCP/IP) network messages are shown here.

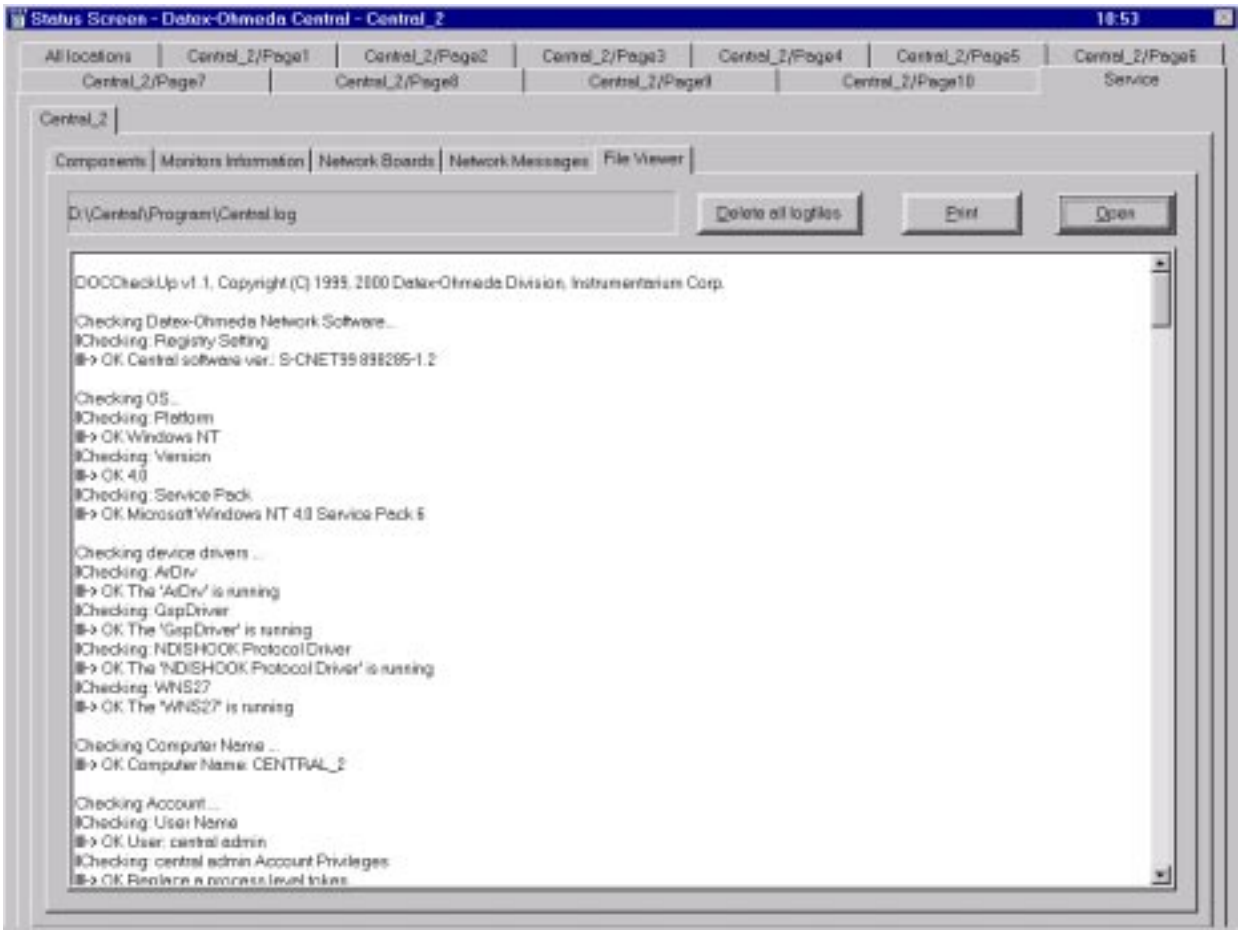

Status Screen - Datex-Ohmeda Central - Central_2
12 08
All locations
Central_2/Page1
Central_2/Page2
Central_2/Page3
Central_2/Page4
Central_2/Page5
Central_2/Page6
Central_2/Page7
Central_2/Page8
Central_2/Page9
Central_2/Page10
Service
Central_2
Components
Monitors Information
Network Boards
Network Messages
File Viewer
Messages
2010-06-13 11:35:41 Component Supervisor [65001] CONNECTED
2010-06-13 12:01:43 Component ICC_WEB_GATE [65001] CONNECTED
2010-06-13 11:35:41 Component ICC_WEB_GATE [65002] CONNECTED
2010-06-13 11:36:15 Monitor CC/5 9444 [9444] logged ON
2010-06-13 11:35:41 Component Printer Services [65004] CONNECTED
2010-06-13 11:35:41 Component Mode Server [65005] CONNECTED
2010-06-13 11:35:41 Component M-To-M Link [65006] CONNECTED
2010-06-13 12:01:58 Component ICC_WEB_MON [65003] CONNECTED
2010-06-13 11:35:41 Component MenuServer [65008] CONNECTED
2010-06-13 11:35:41 Component Status Screen [65009] CONNECTED
2010-06-13 11:35:41 Component ICC_WEB_MON [65012] CONNECTED
2010-06-13 11:35:54 Component Patient View [65010] CONNECTED
2010-06-13 11:36:17 Monitor Mon19 [19] logged ON
2010-06-13 11:36:19 Monitor CC(9282) [9282] logged ON
2010-06-13 11:36:17 Monitor CC/5 1911 [1911] logged ON
2010-06-13 11:36:17 Monitor CC(274) [274] logged ON
2010-06-13 11:36:18 Monitor CM 269 [269] logged ON
2010-06-13 11:36:17 Monitor CC(249) [249] logged ON
2010-06-13 11:36:15 Monitor CM 9283 [9283] logged ON
2010-06-13 11:36:16 Monitor CM 243 [243] logged ON
2010-06-13 11:36:18 Monitor Mon9436 [9436] logged ON
2010-06-13 11:36:14 Monitor Mon9324 [9324] logged ON
2010-06-13 11:36:14 Monitor Mon2167 [2167] logged ON
2010-06-13 11:36:18 Monitor Mon271 [271] logged ON
2010-06-13 11:37:35 Monitor Mon9459 [9459] logged ON
2010-06-13 11:36:15 Monitor cc5 9257 [9257] logged ON
2010-06-13 11:36:18 Monitor Mon265 [265] logged ON
2010-06-13 11:36:15 Monitor Mon258 [258] logged ON
2010-06-13 11:36:17 Monitor cm268 [268] logged ON
2010-06-13 11:36:41 Monitor Light [250] logged ON
2010-06-13 11:36:14 Monitor cm118 [118] logged ON

File Viewer Page

Any text file can be viewed on this page:

– **Open**: Opens a browser window that allows the user to select the specific file to be viewed.

– **Print**: Opens a Print dialog box that allows the user to print the file to a specific printer.



Log Files

Components of the system store log files (.LOG) into the corresponding folder during the system operation. These log files are useful in troubleshooting and are important material when contacting the technical assistance in case of trouble.

These files can be viewed in the File Viewer page, and printed by pushing the ***Print*** button on it..

Most important log files

Error logs are generally located in folders named 'Log' under each component, i.e.

– D:\Central\B2bManager\Log\B2bManager_error.log

– D:\Central\MenuServer\Log\MsPlErro.log

– D:\Central\ModeServer\Log\ModeServerError.log

– D:\Central\MonitorGate\Log\MonitorGate_error.log

- D:\Central\PrinterServices\Log\PSERROR.LOG
- D:\Central\Program\Log\Supervisor_error.log
- D:\Central\StatusScreen\Log\StatScr_error.log

If a problem occurs very early when the system starts up, the error logs may be found directly on the component folder, i.e.:

- D:\Central\B2bManager\B2bManager_error.log
- D:\Central\MenuServer\MsPlErro.log
- D:\Central\ModeServer\ModeServerError.log
- D:\Central\MonitorGate\MonitorGate_error.log
- D:\Central\PrinterServices\PSERROR.LOG
- D:\Central\Program\Supervisor_error.log
- D:\Central\StatusScreen\StatScr_error.log

Other Logs:

- Directory of D:\Central\Program\CENTRAL.LOG (Contains system checkup information created when the system is started).
- Directory of D:\Central\Program\ACFO.LOG (Configuration file organizer log file, important only if Datex-Ohmeda anesthesia information management products are used).

12.5 Central Keyboard, K-CENTRALB

The Central Keyboard, K-CENTRALB, is a clinical keyboard used to operate the Datex-Ohmeda Central.

12.5.1 Technical specifications

Physical dimensions	
Width	313 mm (12.3")
Depth	230 mm (9")
Height	60 mm (2.4")
Weight	1.2 kg (2.6 lbs)
Related standards	
Safety	IEC 601.1
Temperature range	
Operating temperature	+10 to +35 °C (50 to 95 °F)
Storage temperature	-10 to +45 °C (14 to 113 °F)
Humidity range	0 to 90 %, non-condensing
Input voltage	+5 VDC ±10 %
Input current	75 mA max

12.5.2 Functional description

The functional principle of the Central Keyboard, K-CENTRALB is based on the interaction between the controller board, the alphanumeric keyboard, the membrane keypads and the ComWheel.

Electronics assembly

The keyboard, K-CENTRALB consists of the controller board, the alphanumeric keyboard, the membrane keypads and the ComWheel. The electronics assembly is illustrated in a general block diagram shown in Figure 12-2.

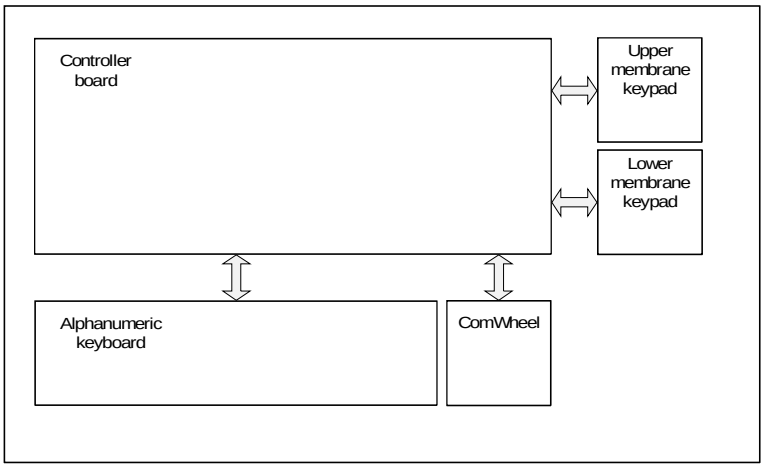


Figure 12-2 Central Keyboard, K-CENTRALB, block diagram

Controller board

The controller board connects the alphanumeric keyboard, the membrane keypads and the ComWheel. The microprocessor scans overall keyboard keys and records a change in key position. When a change in key position is registered, the corresponding key code is sent to the PC. Similarly, the microprocessor scans the ComWheel and records a change in wheel position. The functional principle is illustrated in a general block diagram shown in figure 3-2.

Alphanumeric keyboard

The alphanumeric keyboard forward a change in key position to the controller board.

Membrane keypads

The membrane keypads forward a change in key position to the controller board.

ComWheel

The ComWheel forwards a change in wheel position to the controller board.

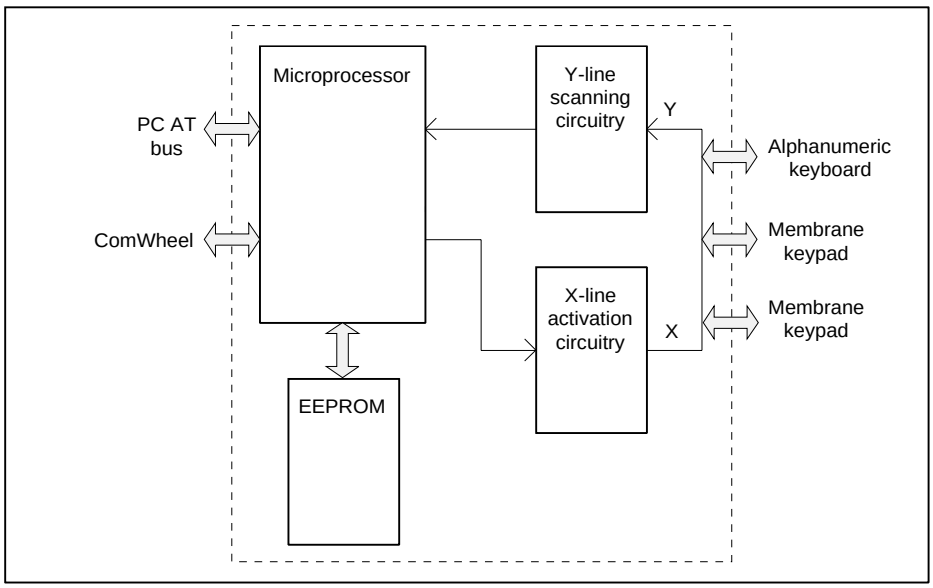
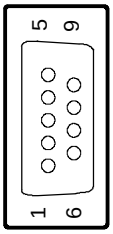


Figure 3-2 Controller board general block diagram

12.5.3 Keyboard connector

The keyboard is connected to the central unit via the Keyboard-IC Cable. The keyboard has a 9 pin D-shaped connector.



Pin Number	I/O	Signal
1	I/O	PC data
2		Not used
3		Not used
4	I	+5 V
5		Ground
6		Not used
7		Not connected
8		Not connected
9	I/O	Clock

12.5.4 Service and repair procedures

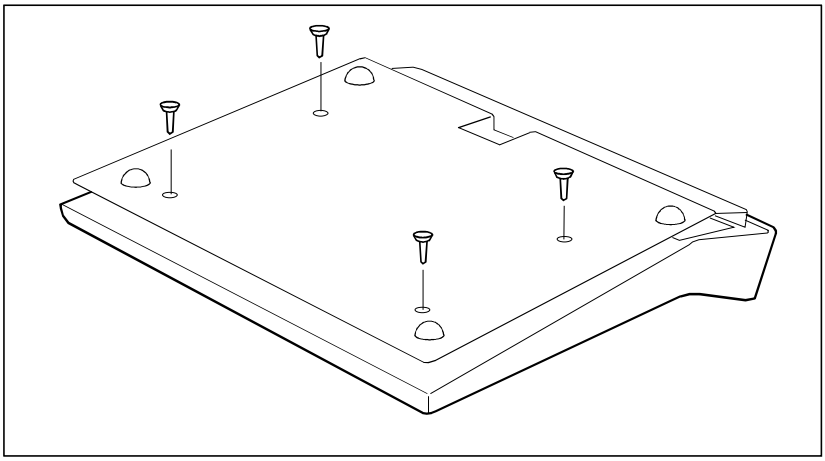
CAUTION Service and repair procedures are to be performed by authorized service personnel only, or the warranty may be void.

12.5.5 Disassembly and reassembly

See following disassembly procedures. The keyboard is reassembled by reversing the disassembly procedure.

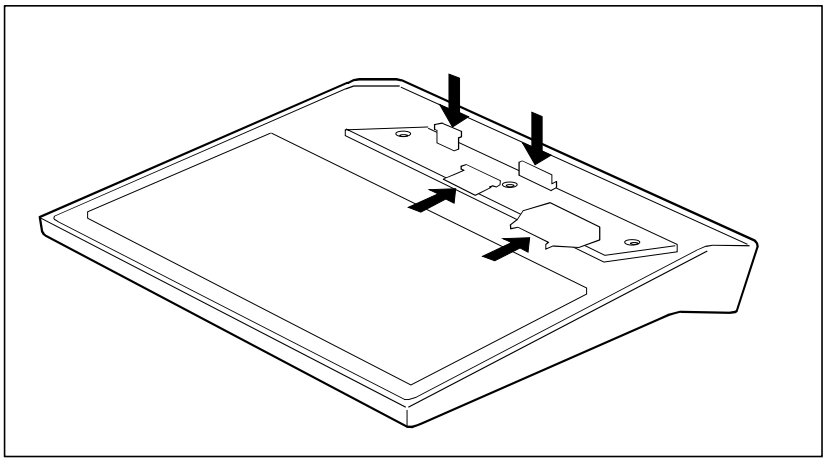
Removing the keyboard chassis

1. Disconnect the Keyboard-IC Cable to remove power input to the keyboard.
2. Loosen the retaining screws holding the keyboard chassis to the keyboard cover and remove the chassis.

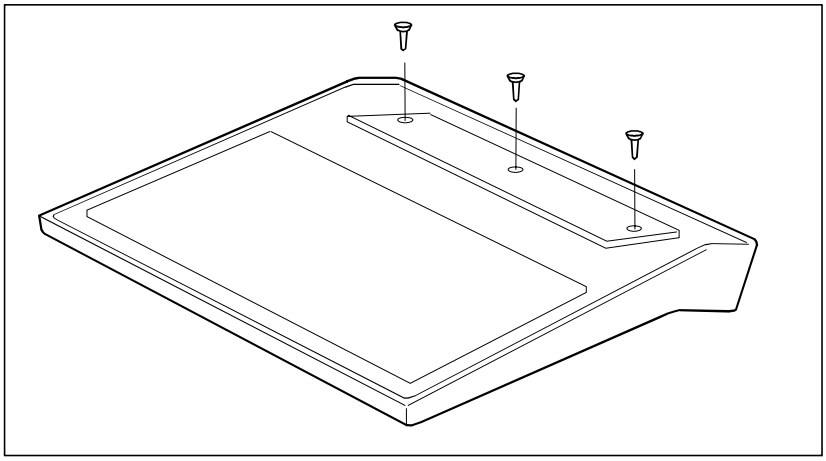


Removing the controller board

1. Remove the keyboard chassis according to previously described procedure.
2. Disconnect the cable to the alphanumeric board, the cables to the membrane keypads and the cable to the ComWheel.

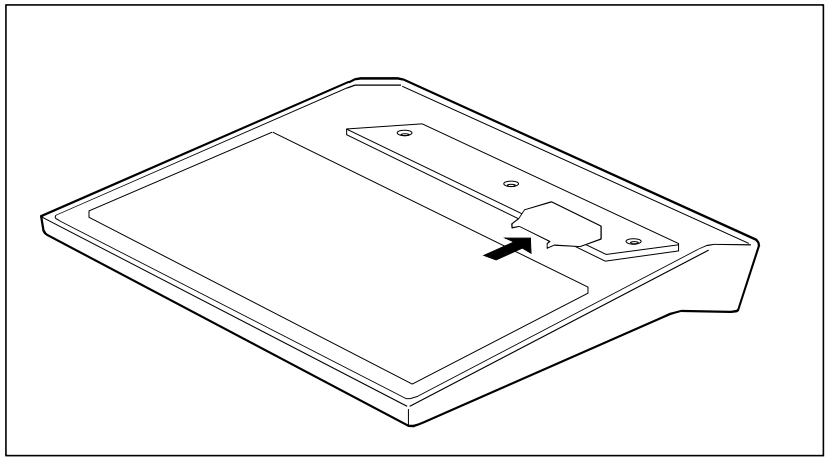


3. Loosen the retaining screws holding the controller board to the keyboard cover and remove the board.

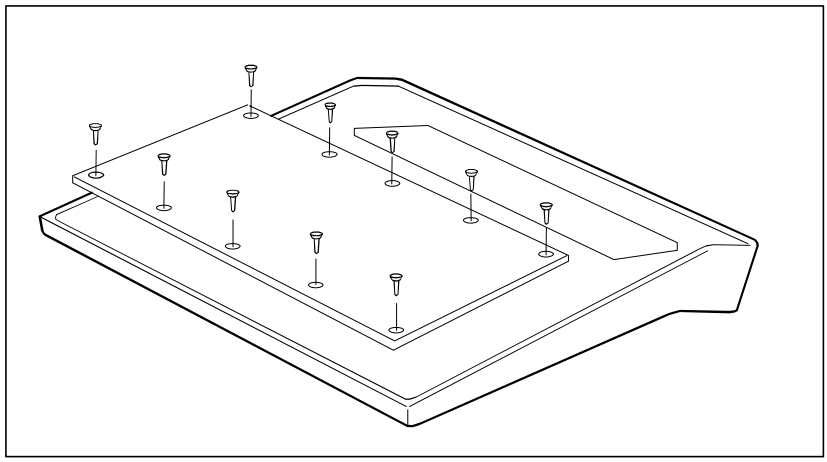


Removing the alphanumeric keyboard

1. Remove the keyboard chassis according to previously described procedure.
2. Disconnect the cable to the controller board.

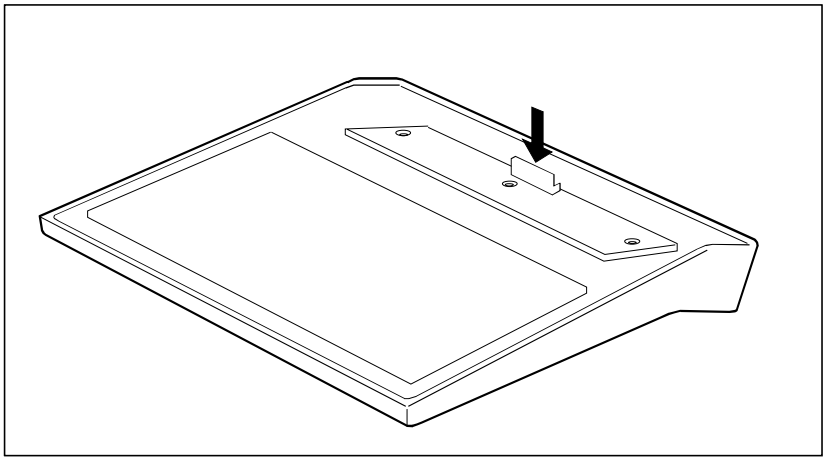


3. Loosen the retaining screws holding the alphanumeric keyboard to the keyboard cover and remove the board.

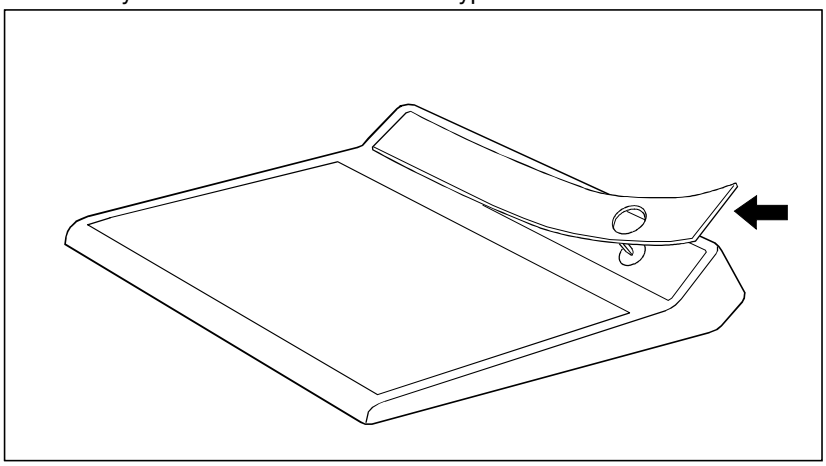


Removing the upper membrane keypad

1. Remove the keyboard chassis according to previously described procedure.
2. Disconnect the cable to the controller board.

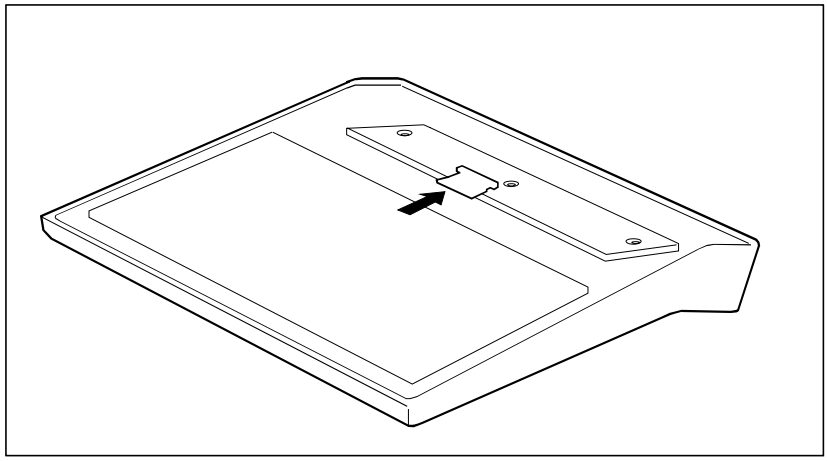


3. Remove the ComWheel cover from the rotary wheel, detach the upper front panel sticker from the keyboard cover and remove the keypad.

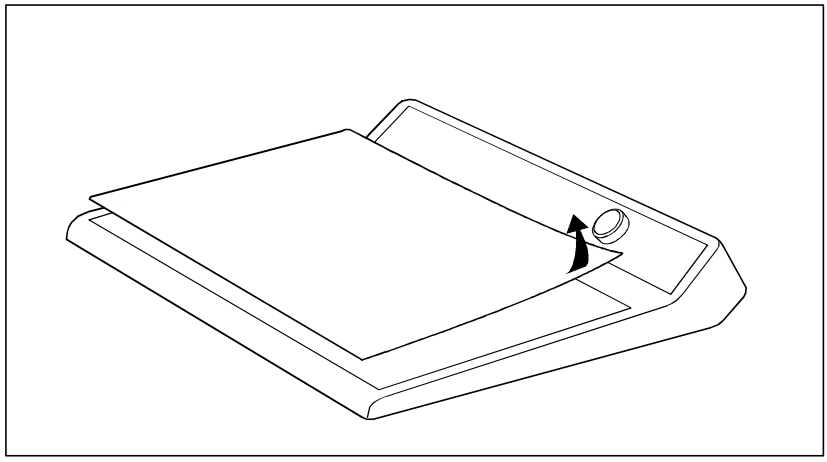


Removing the lower membrane keypad

1. Remove the keyboard chassis according to previously described procedure.
2. Disconnect the cable to the controller board.

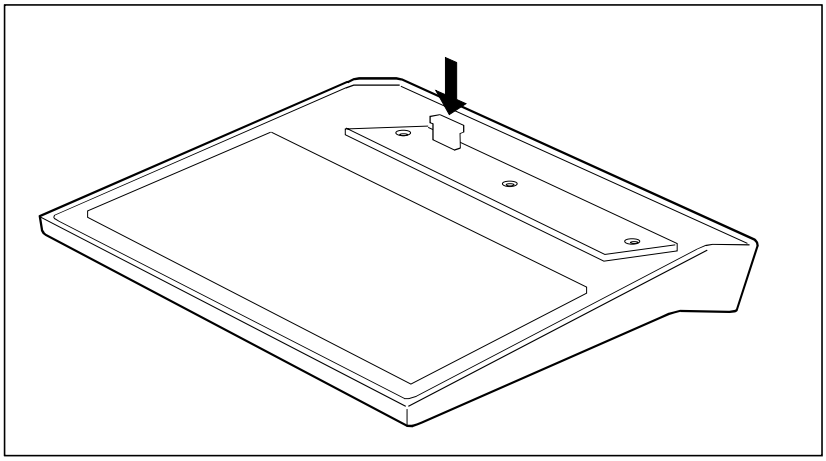


3. Detach the lower front panel sticker from the keyboard cover and remove the keypad.

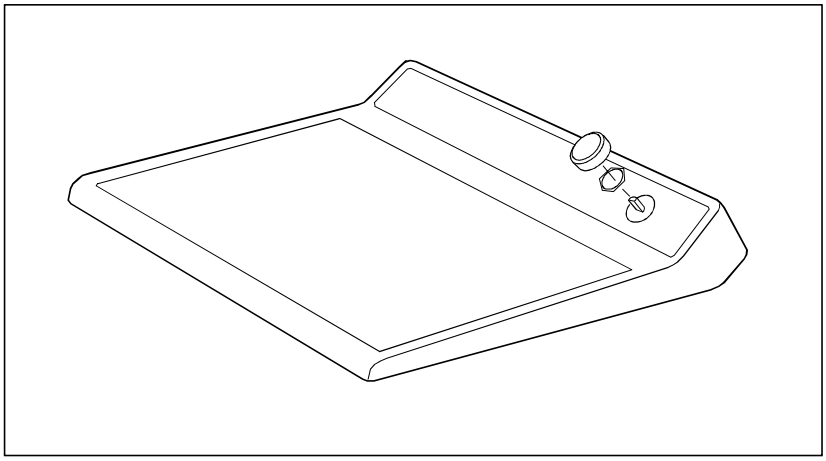


Removing the ComWheel

1. Remove the keyboard chassis according to previously described procedure.
2. Disconnect the cable to the controller board.



3. Remove the ComWheel cover from the rotary wheel, loosen the retaining nut holding the rotary wheel to the keyboard cover and remove the wheel.



12.5.6 Functional checkout

A functional checkout is recommended as the service and repair procedures are completed to ensure a proper operation.

12.5.7 Service and repair procedures

CAUTION Service and repair procedures are to be performed by authorized service personnel only, or the warranty may be void.

A functional checkout is recommended as the service and repair procedures are completed to ensure a proper operation.

CAUTION Use only spare parts and accessories approved to these products. Other parts may result in improper operation, reduced life or damage of the equipment.

The spare parts for the for the Network Manager central unit, Patient Screen, Status Screen, hubs, and uninterruptible power supply are not available from the Datex-Ohmeda. It is recommended to have these products repaired locally.

12.5.8 Spare parts

The spare parts available for the keyboard, K-CENTRALB are listed in Table 12-1.

To order a spare part, identify the faulty component from exploded view and look up the component part number in the list of spare parts. Order the component from your distributor.

Table 12-1 Keyboard, K-CENTRALB, spare parts

Part reference	Description	Part number
1	Pad	65142
2	Alphanumeric keyboard	884178
3	Controller board	893944
4	Rotary wheel	879872
5	ComWheel cover and spring	879191
6	Cross cylinder head screw	61721
7	Lower front panel sticker, white (EN)	8000037
7	Lower front panel sticker , white (DE)	8000038
7	Lower front panel sticker, white (FR)	8000039
7	Lower front panel sticker, white (NL)	8000040
7	Lower front panel sticker, white (ES)	8000041
7	Lower front panel sticker, white (IT)	8000042
7	Lower front panel sticker, white (PT)	8000043
7	Lower front panel sticker, white (FI)	8000044
7	Lower front panel sticker, white (SV)	8000045
7	Lower front panel sticker, white (NO)	8000046
7	Lower front panel sticker, white (DA)	8000047
7	Lower front panel sticker, white (BEL)	8000048
7	Lower front panel sticker, white (SKAND)	8000049
8	Lower membrane keypad	879964
9	Front panel sticker, EN	8000026
9	Front panel sticker, DE	8000027
9	Front panel sticker, FR	8000028
9	Front panel sticker, NL	8000029
9	Front panel sticker, ES	8000030
9	Front panel sticker, IT	8000031
9	Front panel sticker, PT	8000032
9	Front panel sticker, FI	8000033
9	Front panel sticker, SV	8000034
9	Front panel sticker, NO	8000035
9	Front panel sticker, DA	8000036
10	Upper membrane keypad	879373

NOTE: The Central Keyboard-IC Cable consists of the ARK Keyboard-LCD Cable and the miniDIN/DIN adapter cable. The order code for the Central Keyboard-IC Cable is 884940, the order code for the ARK Keyboard-LCD Display Cable is 881154 and the order code for the miniDIN/DIN adapter cable is 884937.

12.5.9 Exploded view of the keyboard

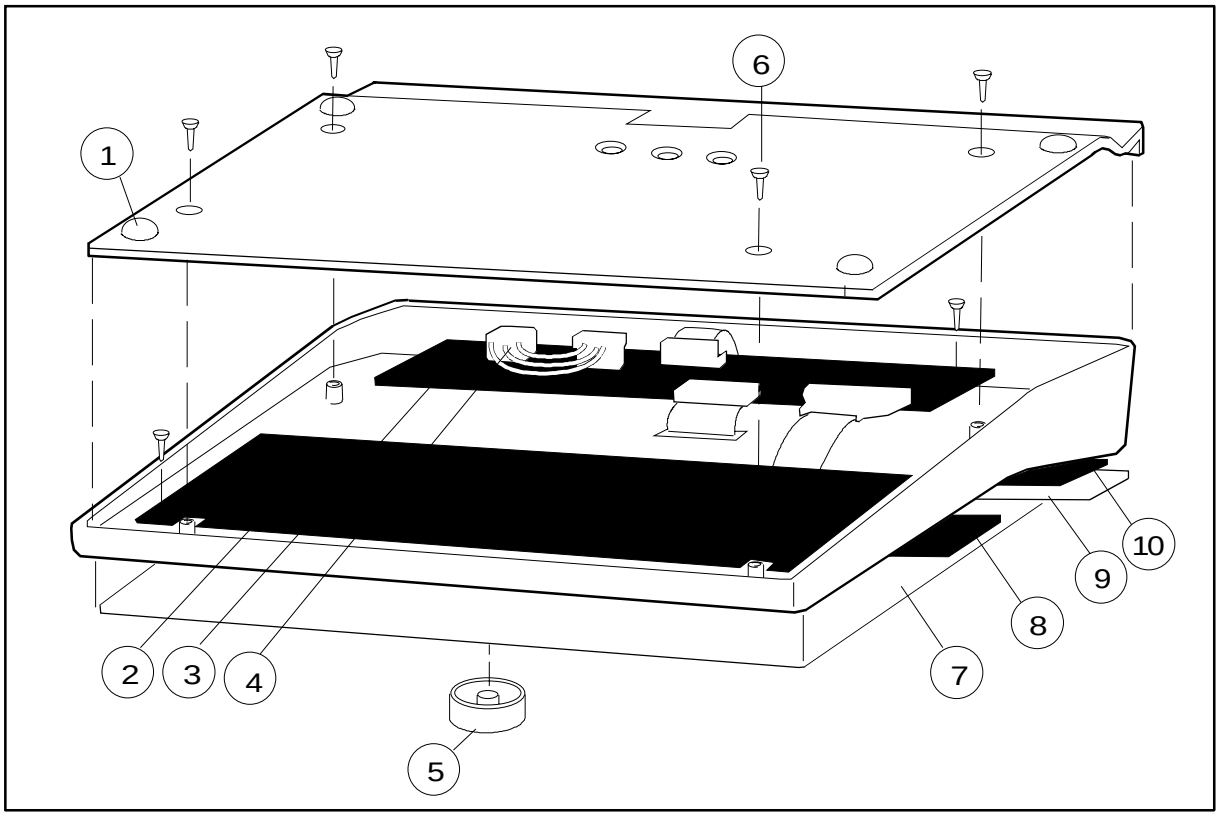


Figure 12-3 Keyboard, K-CENTRALB, exploded view

12.6 Datex-Ohmeda Display Controller Board, B-CDISP

The Display Controller, B-CDISP, is a high resolution display adapter board used to drive the 17" Video Display, D-VIC17 (Patient Screen).

12.6.1 Technical Specifications

Input voltage	+5 V DC
Video output	
Video signal	R,G,B
Signal level	0.8 Vpp. 0.3 - 1.1 V, 75 Ω
Resolution	
HIGH	1984 × 512 pixels
XGA	1024× 768 pixels
Pixel Clock Frequency	
HIGH	80 MHz
XGA	10 MHz
Refresh rate	
Horizontal scan	34.7 kHz
Vertical scan	65 Hz
Sync output	
Sync pulse	Hsync, Vsync
Pulse level	CMOS
Pulse polarity	Negative

12.6.2 Functional description

The functional principle is illustrated in a general block diagram shown in Figure 12-4.

System memory

The system memory contains software code for GSP. The memory consists of two memory banks (256k × 16).

Graphics system processor (GSP)

The Network Manager sends display data, waveforms, lines, numerics, display attribute data and control messages to the graphics system processor (GSP) via ISA bus interface. The GSP converts and places the data into the display memory.

Display memory

The display memory includes display data in digital form (VRAM; 1 MB).

ID memory

The ID memory includes data of the display adapter board: type of the board, control number, and date of completion (EEPROM; 2 kB).

Video interface palette (VIP)

The video interface palette (VIP) converts the pixel data clocked out of the display memory into analog RGB signals synchronized with the pixel clock frequency (80 MHz). The RGB signals are then passed through the video buffers for output to the 17" Video Display, D-VIC17.

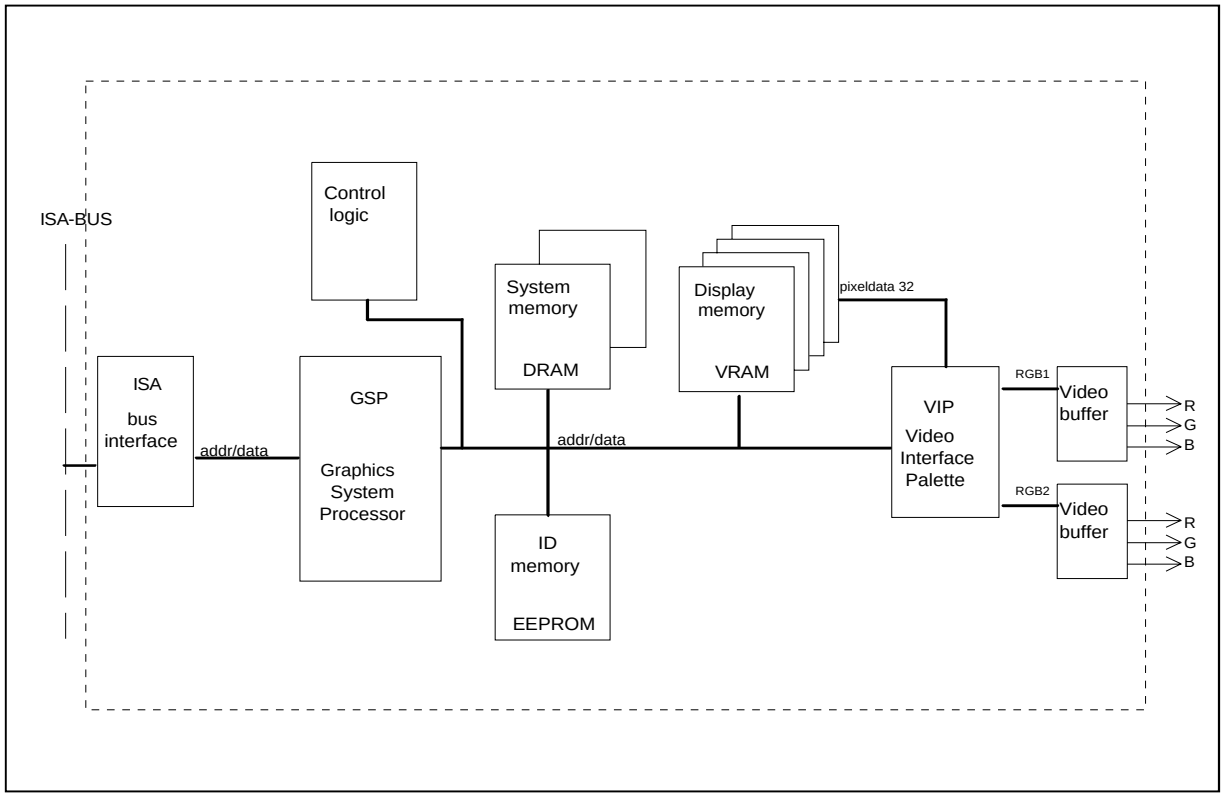
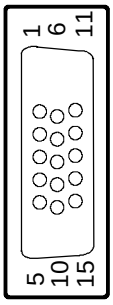


Figure 12-4 Display Controller Board, B-CDISP, general block diagram

12.6.3 Display connector

The Display Controller Board, B-CDISP is connected to the 17" Video Display, D-VIC17 (Patient Screen) via the display data cable. The board has two similar 15 pin D-shaped connectors (X2 and X3) for the connection.



Pin Number	I/O	Signal
1	O	Red video
2	O	Green video
3	O	Blue video
4	I	Mon 1/2 ID 2
5		Ground
6		Red ground
7		Green ground
8		Blue ground
9		Not connected
10		Sync ground
11	I	Mon 1/2 ID 0
12	I	Mon 1/2 ID 1
13	O	Hsync
14	O	Vsync
15		Not connected

12.6.4 Jumper settings

The Display Controller Board, B-CDISP, can be used as primary or secondary display, make sure that the jumper settings are set accordingly:

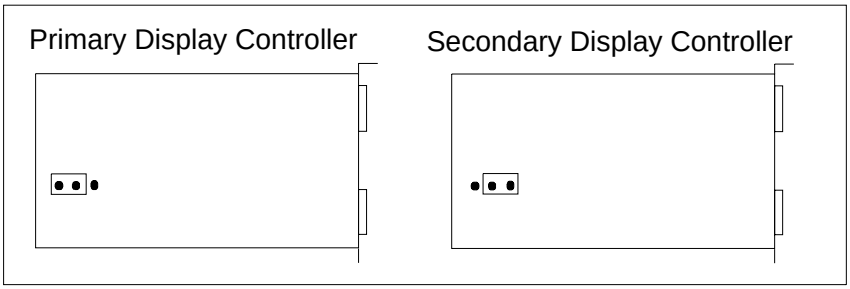
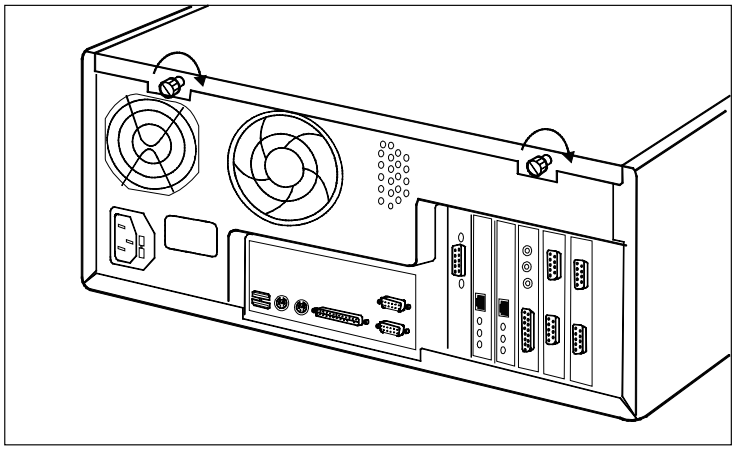


Figure 12-5 Display Controller, B-CDISP, jumper settings

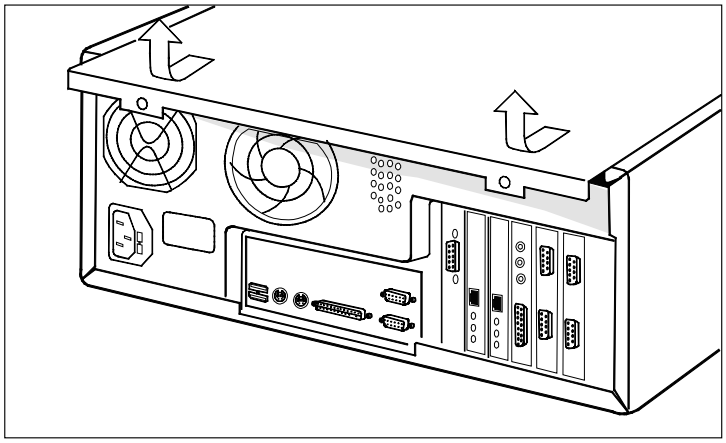
NOTE: The display controller board B-CDHI cannot be used with the Central or ViewStation.

12.6.5 Replacing the Display Controller Board, B-CDISP

1. Make sure that the power to the Central is turned off, and disconnect all cables on the rear panel.
2. Unscrew the two screws holding the top cover in place.



3. Push the top cover forward and raise it upwards.



4. Unscrew one screw holding the board in position and remove the board from the slot.
5. Remove the new board from the protective anti static packaging. Always hold the board by its edges and wear a wrist grounding strap.

CAUTION The board comprises sensitive integrated circuits that can be damaged by an electrostatic discharge. Careful handling of the board is therefore essential.

6. Insert the new board into the expansion slot and firmly press it in position. Secure the board with the screw removed from the bracket earlier.
7. Replace the top cover and secure it with the screw removed from the cover earlier.
8. Reconnect all cables on the rear panel of the Central.

12.6.6 Service and repair procedures

Do not attempt to service the Display Controller, B-CDISP, but return the board to your authorized Datex-Ohmeda distributor for repair.

CAUTION Disassembly and re-assembly procedures are to be performed by authorized service personnel only or the warranty may be void.

12.6.7 Functional checkout

Check that all connectors are properly connected and if there is any problem after turning on the power, please refer to section *Troubleshooting*.

12.7 Spare Parts

There are no spare parts for the Display Controller Board, B-CDISP, it can only be replaced.

13 OTHER PRODUCTS

13.1 Network Computer, C-NTNET

The Network Computer, C-NTNET,is the computer used in Centrals and ViewStations. It is equipped with two commercial network boards. This computer must be purchased from Datex-Ohmeda.

For service and technical information, refer to the manuals delivered with the device.

13.2 Video displays, D-VIC17 and D-VIC15

The 17" Video Display, D-VIC17, is used as the Patient Screen. The 15" Video Display, D-VIC15, is used as the Status Screen.

It is recommended to purchase all the displays from Datex-Ohmeda. The 15" Video display can also be purchased locally, but in that case Datex-Ohmeda will not bear responsibility of its functions and compatibility. Contact your authorized distributor for further information.

For service and technical information, refer to the manuals delivered with the device.

13.3 Uninterruptible power supply, UPS-500

The Uninterruptible Power Supply, UPS-500 is a true on-line-UPS used to supply clean, single phase power without any interruption to the Network Manager central unit. The UPS can also be purchased locally, contact your authorized distributor for further information.

For service and technical information, refer to the manuals delivered with the device.

13.4 Central printer, P-CENTR

The Central Printer, P-CENTR is a PCL 5 compatible laser printer with true 600 dpi resolution used to centrally print graphical trend data or anesthesia records.

For service and technical information, refer to the manuals delivered with the device.

If you purchase the printer locally we recommend HP 4050N series printers with 4 MB memory. Other printers' compatibility cannot be guaranteed.

13.5 Strip-chart recorder, N-REC4

This device must be purchased from Datex-Ohmeda. The technical information on the strip chart recorder is available on request.

13.6 Hubs

The hubs are used to connect the Central and the monitors to the Datex-Ohmeda Network. There are four different hubs available, and they can be also purchased locally:

HUB-8 and HUB-16 are 10 Mbps hubs for the monitor network, and HUB-8FAST and HUB-16FAST are 100Mbps hubs for Datex-Ohmeda Network.

For service and technical information, refer to the manuals delivered with the device.

APPENDIX A: TECHNICAL DATA SHEETS FOR THE CABLING

1720A Category 5 UTP

Description

4 PR UTP (Unshielded Twisted Pair) cable, 24 AWG solid bare copper, polyolefin insulation, singles adjoined, rip cord, PVC jacket. Jacket is sequentially marked at 1 meter intervals.

Electrical characteristics

Max. operating voltage	300 V RMS
Nom. Capacitance @ 1 kHz	14 pF/ft
Nom. Velocity of propagation	70 %
Nominal capacitance unbalance	100 pF/1000 ft
Maximum capacitance unbalance	200 pF/1000 ft
Nom. condr. D.C.R. @ 20C	24.0 Ω /1000 ft
Max. condr. D.C.R. @ 20C	27.4 Ω /1000 ft
Nominal D.C.R. unbalance	1.5 %
Maximum D.C.R. unbalance	3.0 %

Physical characteristics

Temperature range	-20 to 80 °C
Insulation material	Polyolefin
Jacket material	PVC
Maximum pulling tension	25 lb.
Nominal weight /1000 ft	22.4 lb.
Minimum bend radius	0.8 in
Nominal diameter	0.200 in.
Applicable specifications	UL type CM. C(UL) CM. Datatwist 350 spec. NEMA low loss NEMA extended freq., TIA/EIA 568A UL verified ISO IEC DIS 11801 category 5
Flame test	UL1481 vertical tray, CSA FT1

Colour code

Pair #1	White/Blue&Blue
Pair #2	White/Orange&Orange
Pair #3	White/Green&Green
Pair #4	White/Brown&Brown

1720A Category 5 FTP

Description

Category 5 cable, 4 pairs, 24 AWG solid bare copper, polypropylene insulation, O/A lateral foil shield, spiral TC drain, nylon rip cord, PVC jacket. Jacket is sequentially marked at 1 meter intervals.

Electrical characteristics

Max. operating voltage	300 V RMS
Max. continuous current per conductor @ 25 °C	1.4 A
Nom. capacitance @ 1 kHz	14 pF/ft
Nom. velocity of propagation	70 %
Nom. condr. D.C.R. @ 20C	25 Ω / 1000 ft
Max. shield D.C.R. @ 20C	6.1 Ω / 1000 ft

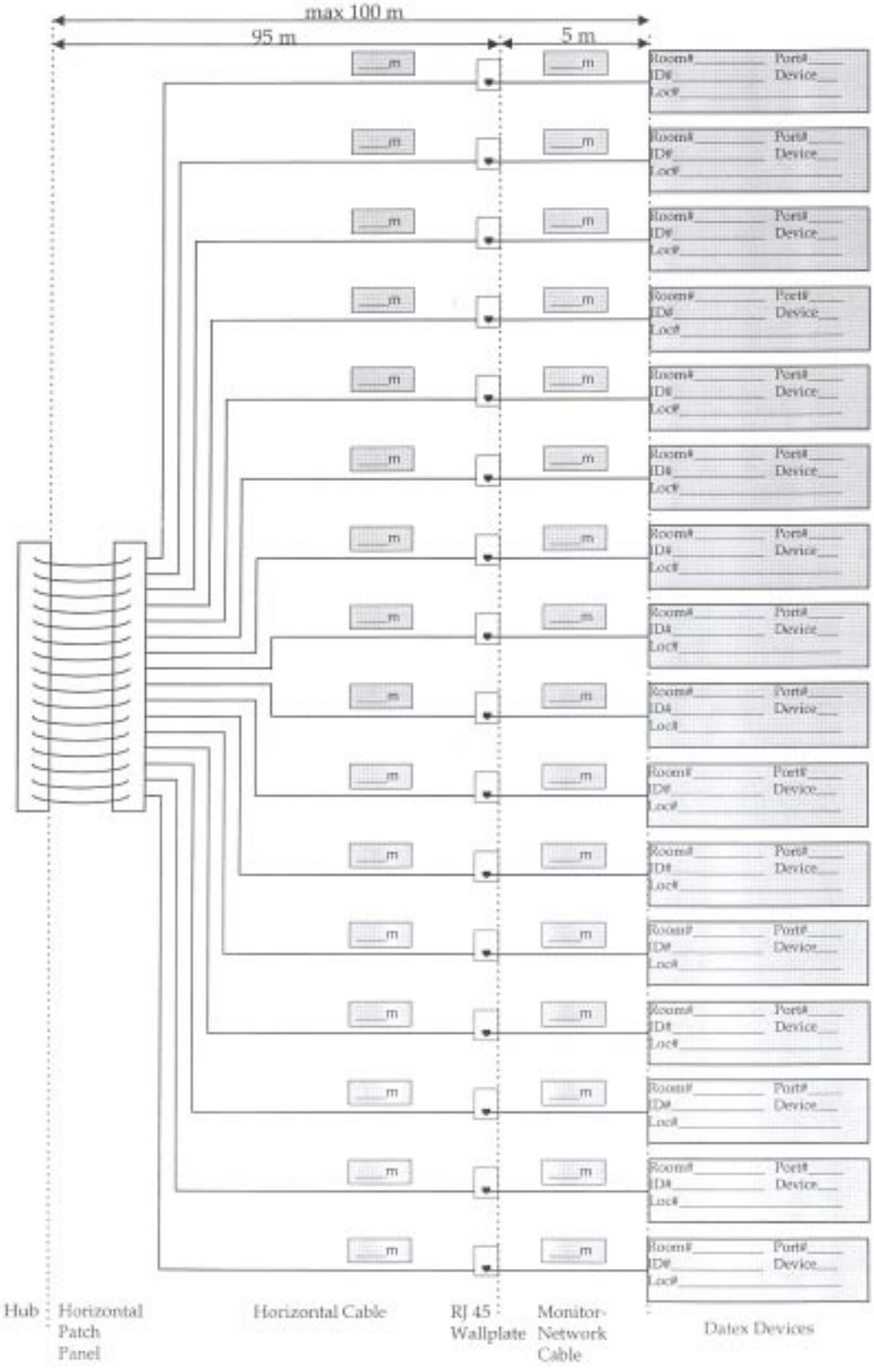
Physical characteristics

Temperature range	-20 to 80 °C
Insulation material	Polypropylene
Shielding	Aluminium mylar shield 100 % coverage, laterally applied with short fold and spiral drain
Jacket material	PVC (dec grey & blue)
Maximum pulling tension	41 lb.
Nominal weight / 1000 ft	31.5 lb.
Minimum bend radius	2.50 in
Nominal diameter	0.265 in.
Applicable specifications (US)	EIA/TIA TSB-36, Cat. 5, NEMA low loss II UL/NEC type CM CSA PCC FT-1
Applicable specifications (EC)	ISO/IEC DIS 11801 Cat. 5

Colour code

Pair #1	White/Blue&Blue
Pair #2	White/Orange&Orange
Pair #3	White/Green&Green
Pair #4	White/Brown&Brown

APPENDIX B: EXAMPLE OF A NETWORK SITE PLAN



APPENDIX C: EXAMPLE OF A CABLE CERTIFICATION REPORT

Cable Certification Report
CAT5 Link

Circuit ID:	HOSPITAL XYZ/2	Date:	22/04/94
Test Result:	PASS	Cable Type:	Belden 1633A
Owner:	GENERAL OR	NVP:	
Cable Grade:		Gauge:	
Serial Number:	38S93LB0520	Manufacturer:	DATEX
SW Version:	1.10a	Connector:	
		User:	

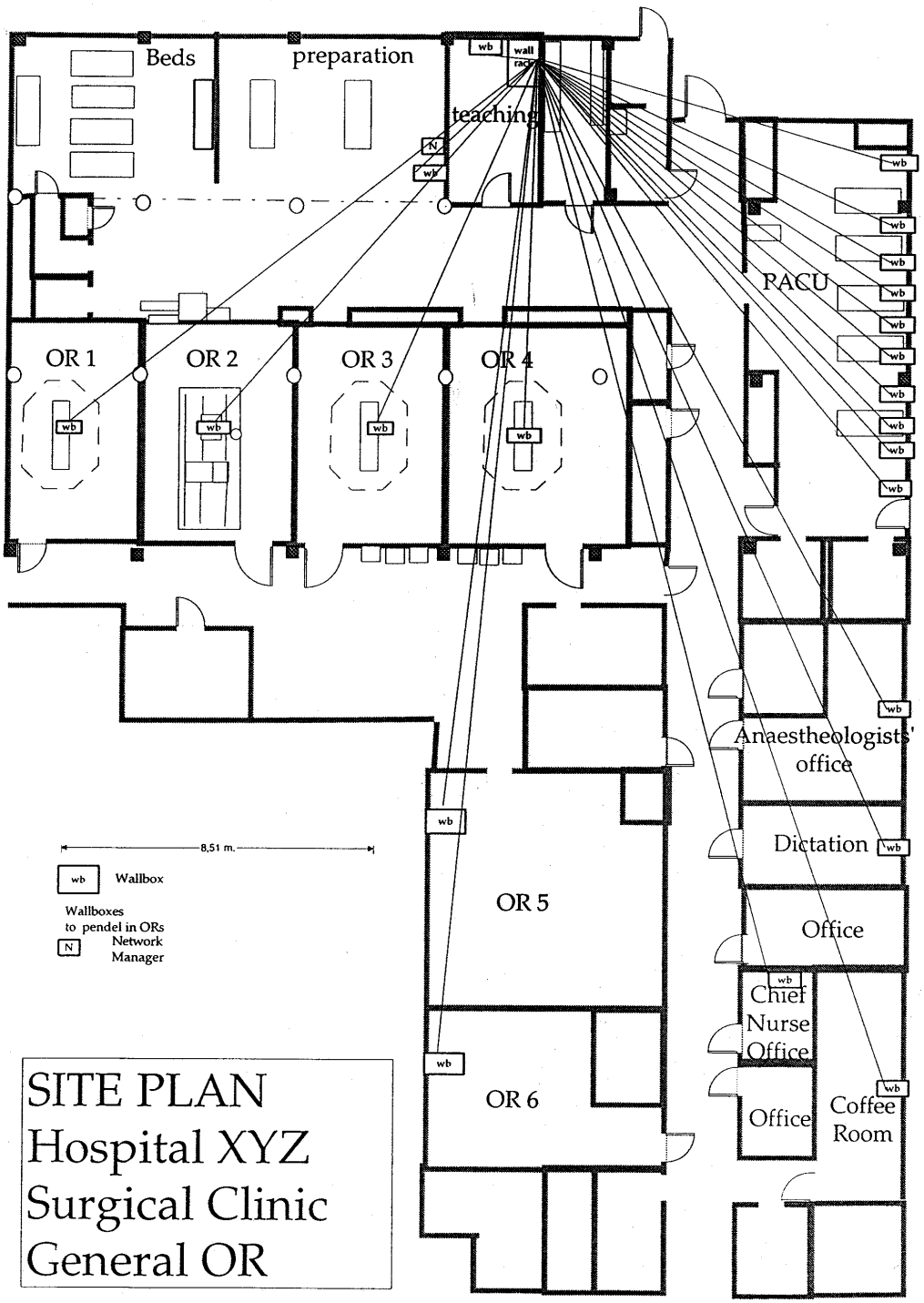
Cable End #1:		Cable End #2:	
BuildingMAIN	Floor: 2	Building: MAIN	Floor: 2
Closet: GENERAL OR/TEACHING		Closet: GENERAL OR/OR 1	
Rack: 1	Hub: 1	Rack:	Hub:
Slot: 1	Port: 1	Slot:	Port:

Test		Expected Results	Actual Results			
Wire Map		Near 12345678 Far 12345678	Near 12345678 Far 12345678			
			Pair 12	Pair 36	Pair 45	Pair 78
Length	ft	10.0 - 328.0	30.0	30.0	30.0	30.0
Impedance:	ohms	80.0 - 125.0	104.0	108.0	107.0	94.0
Resistance	ohms	0.0 - 18.8	1.7	1.7	1.7	1.8
Noise	mV	-				
Capacitance	pF	50.0 - 5600.0	466.0	477.0	441.0	480.0
Attenuation	dB		1.7	1.7	2.0	1.4
@Freq	mHz		100.0	100.0	100.0	62.5
Limit	dB		23.6	23.6	23.6	18.3

NEXT Pair Combinations		12/36	12/45	12/78	36/45	36/78	45/78
NEXT Loss	dB	43.7	38.6	43.7	31.5	36.3	40.6
@Freq 0.7-100.0	mHz	99.5	99.9	56.7	98.1	99.9	95.1
NEXT Limit Cat 5 formula	dB	27.1	27.1	31.3	27.2	27.1	27.5
Active ACR (5.0)	dB	42.0	36.0	46.0	30.0	34.0	41.0
Pair Rank							

Signature: _____ Date: _____

APPENDIX D: EXAMPLE OF A SITE PLAN



APPENDIX E: EXAMPLE OF A CENTRAL.LOG FILE

```
DOCCheckUp v1.1, Copyright (C) 1999, 2000 Datex-Ohmeda Division, Instrumentarium
Corp.

Checking Datex-Ohmeda Network Software...
      Checking: Registry Setting
            -> OK Central software ver.: S-CNET99 898285-1.2

Checking OS...
      Checking: Platform
            -> OK Windows NT
      Checking: Version
            -> OK 4.0
      Checking: Service Pack
            -> OK Microsoft Windows NT 4.0 Service Pack 6

Checking device drivers ...
      Checking: ArDrv
            -> OK The 'ArDrv' is running
      Checking: GspDriver
            -> OK The 'GspDriver' is running
      Checking: NDISHOOK Protocol Driver
            -> OK The 'NDISHOOK Protocol Driver' is running
      Checking: WNS27
            -> OK The 'WNS27' is running

Checking Computer Name ...
            -> OK Computer Name: CENTRAL_1

Checking Account ...
      Checking: User Name
            -> OK User: central user
      Checking: central user Account Privileges
            -> OK Bypass traverse checking
            -> OK Shut down the system
            -> OK Increase quotas
            -> OK Load and unload device drivers
            -> OK Change the system time
            -> OK Act as part of the operating system
            -> OK Replace a process level token

Checking Network Adapters ...
      Checking: Adapter 0, Service Name: El90x1, Symbolic Link: \Device\El90x1,
Description: 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC (3C905B-TX),
Manufacturer: 3Com
            -> OK Using for TCP/IP Networking.
      Checking: Adapter 1, Service Name: El90x2, Symbolic Link: \Device\El90x2,
Description: 3Com Fast EtherLink XL 10/100Mb TX Ethernet NIC (3C905B-TX),
Manufacturer: 3Com
            -> OK Can be used for Monitor Networking.

Checking TCP/IP Network Configuration ...
      Checking: Initializing Winsock 2.0 ...
            -> OK
      Checking: Hostname
            -> OK Hostname central_1.
      Checking: IP Address
```

```
            -> OK IP Address 194.9.228.131.
      Checking: Stop Winsock 2.0
            -> OK Stop Winsock 2.0.

Checking Central Directory Structure ...
      Checking: 'D:\' Directory.
            -> OK
      Checking: 'D:\CENTRAL' Directory.
            -> OK
      Checking: 'D:\CENTRAL\B2BMANAGER' Directory.
            -> OK
      Checking: 'D:\CENTRAL\GSPUI' Directory.
            -> OK
      Checking: 'D:\CENTRAL\GSPUI\GSP' Directory.
            -> OK
      Checking: 'D:\CENTRAL\GSPUI\TEXTS' Directory.
            -> OK
      Checking: 'D:\CENTRAL\MENUSERVER' Directory.
            -> OK
      Checking: 'D:\CENTRAL\MODESERVER' Directory.
            -> OK
      Checking: 'D:\CENTRAL\MONITORGATE' Directory.
            -> OK
      Checking: 'D:\CENTRAL\PRINTERSERVICES' Directory.
            -> OK
      Checking: 'D:\CENTRAL\PROGRAM' Directory.
            -> OK
      Checking: 'D:\CENTRAL\SETUP' Directory.
            -> OK
      Checking: 'D:\CENTRAL\STATUSSCREEN' Directory.
            -> OK
      Checking: 'D:\CENTRAL\TOOLS' Directory.
            -> OK

Checking System Configuration ...
      Checking: Loading System Configuration (CENTRAL.OPT & CENTRAL.AIC)...
            -> OK Loaded.
      Checking: System Configuration ...
            -> OK

Starting StartUp Setup ...
Checking StartUp Setup ...
      Copying D:\CENTRAL\SETUP\NETWORK.AIC to D:\CENTRAL\PROGRAM\NETWORK.AIC
            -> OK
      Copying D:\CENTRAL\SETUP\SETUP.AIC to D:\CENTRAL\PROGRAM\SETUP.AIC
            -> OK
      Copying D:\CENTRAL\SETUP\MONVIEWS.AIC to D:\CENTRAL\PROGRAM\MONVIEWS.AIC.
            -> OK
      Remove invalid monitors from MONVIEWS.AIC...
            -> OK
      Copying D:\CENTRAL\SETUP\STATSCRN.AIC to D:\CENTRAL\PROGRAM\STATSCRN.AIC.
            -> OK
      Loading SETUP.AIC file.
            -> OK
      Checking patient data 'D:\CENTRAL\PATDATA' path.
            -> OK
      Checking external menu 'D:\CENTRAL\MENUS' path.
            -> OK
      Checking primary menu 'D:\CENTRAL\MENUS' path.
```

```
            -> OK
      Checking patient data archive 'D:\CENTRAL\PATDATA\ARC' path.
            -> OK
      Copying D:\CENTRAL\MENUS\*.* to D:\CENTRAL\MENUS\.
            -> OK
      Copying D:\CENTRAL\SETUP\MONITORS.CFG to D:\CENTRAL\MENUS\MONITORS.CFG.
            -> OK
      Running Case Configuration File Organizer D:\CENTRAL\TOOLS\ACFO.EXE; Menu
path = D:\CENTRAL\MENUS; Patient data archive path = D:\CENTRAL\PATDATA\ARC;
Configuration file path = D:\CENTRAL\PROGRAM
            -> OK
      Copying D:\CENTRAL\MENUS\ENG\ENGUFRM.<EXT> to
D:\CENTRAL\MENUS\MENUFRM.<EXT>.
            -> OK
      Copying D:\CENTRAL\MENUS\ENG\ENGUVAR.<EXT> to
D:\CENTRAL\MENUS\MENUVAR.<EXT>.
            -> OK
      Copying D:\CENTRAL\MENUS\ENG\ENGED1.TXT to D:\CENTRAL\MENUS\FIXED1.TXT.
            -> OK
      Delete not used Index files from D:\CENTRAL\MENUS directory.
            -> OK
      Setting ARP table entries to static
            -> OK: ARP table entries made static

Checking Network Options ...
      Checking: Loading Central Network Setup (NETWORK.OPT & NETWORK.AIC)...
            -> OK Loaded.
      Checking: Initializing Winsock 2.0 ...
            -> OK
      Checking: Looking for own network ...
            -> OK Local central network name: Central_1
      Checking: Local (Central_1) network type.
            -> OK Local central network type: Central
      Checking: Local (Central_1) network type and monitors.
            -> OK Central type is Central, Local monitors number: 1.
      Checking: Local central network IP adress and port: CENTRAL_1
            -> OK Local central network port number: 5554
      Checking: Local central network ID
            -> OK Local central network ID: 1
      Checking: Looking for Primary Central setting
            -> OK The local computer is the Primary Central.
      Checking: Stop Winsock 2.0
            -> OK

Checking Monitor View Setup ...
      Checking: Reloading Central Network Setup (NETWORK.OPT & NETWORK.AIC)...
            -> OK Loaded.
      Checking: Reloading Central View Setup (MONVIEWS.OPT & MONVIEWS.AIC)...
            -> OK Loaded.
      Checking: View configuration Default ...
      Checking: Processing page Main Page ...
            -> OK Monitor Test Monitor, ID 111, Group ID 1, Network ID 1.
            -> OK Page Main Page
            -> OK Configuration Default ...

Checking Central General Setup ...
      Checking: Loading Central General Setup (SETUP.OPT, SETUP.AIC)
            -> OK Loaded.
      Checking: Monitor network board
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      -> OK
Checking: Lookup Monitor Network Adapter \Device\El90x2 in the Registry ...
      -> OK Found.
Checking: Open Monitor Network Adapter \Device\El90x2 ...
      -> OK
Checking: Monitor Network Adapter Address
      -> OK Monitor Network Adapter Address 00.10.4B.C9.62.0A.
Checking: Close Monitor Network Adapter \Device\El90x2 ...
      -> OK
Checking: Monitor Network Adapter & Cable ...
      -> OK
Checking: Time syschronization
      -> OK Time syschronization OFF
Checking: Path MONTOMON_SAVAL_PATH
      -> OK MONTOMON_SAVAL_PATH = 'D:\CENTRAL\DATA\SAVALPATH'
Checking: Path B2B_LOG_PATH
      -> OK B2B_LOG_PATH = 'D:\CENTRAL\B2BMANAGER\LOG'
Checking: Path GSPUI_LOG_PATH
      -> OK GSPUI_LOG_PATH = 'D:\CENTRAL\GSPUI\LOG'
Checking: Path SS_LOG_PATH
      -> OK SS_LOG_PATH = 'D:\CENTRAL\STATUSSCREEN\LOG'
Checking: Path MS_LOG_PATH
      -> OK MS_LOG_PATH = 'D:\CENTRAL\MENUSERVER\LOG'
Checking: Path MG_LOG_PATH
      -> OK MG_LOG_PATH = 'D:\CENTRAL\MONITORGATE\LOG'
Checking: Path PS_LOG_PATH
      -> OK PS_LOG_PATH = 'D:\CENTRAL\PRINTERSERVICES\LOG'
Checking: Path WG_LOG_PATH
      -> WARNING: WG_LOG_PATH = 'D:\CENTRAL\WEBGATE\LOG' not exist.
Checking: Path SV_LOG_PATH
      -> OK SV_LOG_PATH = 'D:\CENTRAL\PROGRAM\LOG'
Checking: Path INMSG_LOG_PATH
      -> WARNING: INMSG_LOG_PATH = 'D:\CENTRAL\DATA\INMSGLOG' not exist.
Checking: Path EXT_MENU_PATH
      -> OK EXT_MENU_PATH = 'D:\CENTRAL\MENUS'
Checking: Path CFG_MENU_PATH
      -> OK CFG_MENU_PATH = 'D:\CENTRAL\MENUS'
Checking: Path PATDATA_PATH
      -> OK PATDATA_PATH = 'D:\CENTRAL\PATDATA'
Checking: Path AIC_INMSG_PATH
      -> OK AIC_INMSG_PATH = 'D:\CENTRAL\InMsg'
Checking: Path AIC_MENU_PATH
      -> OK AIC_MENU_PATH = 'D:\CENTRAL\TMP'
Checking: Path AIC_TMPPATH
      -> OK AIC_TMPPATH = 'D:\CENTRAL\TMP'
Checking: Path CASE_LIST_PATH
      -> OK CASE_LIST_PATH = 'D:\CENTRAL\CASES'
Checking: Path EXPORTED_EVENT_OUTMSG_PATH1
      -> WARNING: EXPORTED_EVENT_OUTMSG_PATH1 = '' not exist.
Checking: Path EXPORTED_EVENT_OUTMSG_PATH2
      -> WARNING: EXPORTED_EVENT_OUTMSG_PATH2 = '' not exist.
Checking: Path EXPORTED_EVENT_OUTMSG_PATH3
      -> WARNING: EXPORTED_EVENT_OUTMSG_PATH3 = '' not exist.
Checking: Path EXPORTED_EVENT_OUTMSG_PATH4
      -> WARNING: EXPORTED_EVENT_OUTMSG_PATH4 = '' not exist.
Checking: Path EXPORTED_EVENT_OUTMSG_PATH5
      -> WARNING: EXPORTED_EVENT_OUTMSG_PATH5 = '' not exist.
Checking: Path EXPORTED_EVENT_OUTMSG_PATH6
      -> WARNING: EXPORTED_EVENT_OUTMSG_PATH6 = '' not exist.
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      Checking: Path EXPORTED_EVENT_OUTMSG_PATH7
            -> WARNING: EXPORTED_EVENT_OUTMSG_PATH7 = '' not exist.
      Checking: Path EXPORTED_EVENT_OUTMSG_PATH8
            -> WARNING: EXPORTED_EVENT_OUTMSG_PATH8 = '' not exist.
      Checking: Path EXPORTED_EVENT_OUTMSG_PATH9
            -> WARNING: EXPORTED_EVENT_OUTMSG_PATH9 = '' not exist.
      Checking: Path MODE_DIRECTORY
            -> OK MODE_DIRECTORY = 'D:\CENTRAL\MODESERVER\MODES'
      Checking: Path REC_SPOOL_DIR
            -> WARNING: REC_SPOOL_DIR = 'D:\CENTRAL\DATA\PRINTSPOOL\' not exist.
      Checking: Default Printer & Recorder
            -> OK
      Checking: All Ports
            -> OK
      Checking: PRN1_NAME Printer
            -> OK Printer PRN1_NAME attached to port Central Printer.
      Checking: PRN2_NAME Printer
            -> OK
      Checking: PRN3_NAME Printer
            -> OK
      Checking: PRN4_NAME Printer
            -> OK
      Checking: PRN5_NAME Printer
            -> OK
      Checking: PRN6_NAME Printer
            -> OK
      Checking: PRN7_NAME Printer
            -> OK
      Checking: PRN8_NAME Printer
            -> OK
      Checking: PRN9_NAME Printer
            -> OK
      Checking: Recoreder type
            -> OK Recorder type is 4 inch.
      Checking: Recoreder port
            -> OK Recorder port is LPT1.
      Checking: Display configuration
            -> OK
      Checking: Service User Account ...
            -> OK
      Checking: Service Password ...
            -> OK
      Checking: Exit Password ...
            -> OK
      Checking: Type of first Patient Screen...
            -> OK -> CRT
      Checking: Type of second Patient Screen...
            -> OK -> CRT

Check licences for D-O monitors ...
      Checking: Smart Key
            -> OK
      Checking: Licenced Monitor Count
            -> OK Number of licenced monitors is 16.

DOCCheckUp report: System is ready.
```

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